DER NO. HIAD8704096C9

Service Manual

ASD2

Cassette Deck

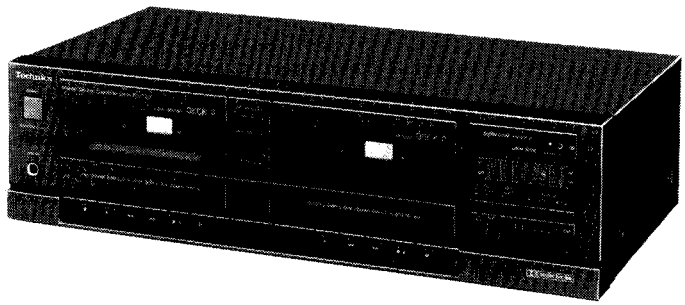
RS-T22

Dolby B•C NR-Equipped
Double Cassette Deck

DOLBY B•C NR

Color

(K)...Black Type
(S)...Silver Type



Color	Areas
(K) (S)	[E].....Continental Europe.
(K) (S)	[EK].....United Kingdom.
(K) (S)	[EH].....Holland.
(K) (S)	[EG].....F.R. Germany.
(K) (S)	[XA].....Asia, Latin America, Middle Near East, Africa and Oceania.
(K) (S)	[XL].....Australia.
(K)	[PA].....Far East PX.
(K)	[PE].....European Military.
(K)	[XB].....Saudi Arabia.

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system Stereo cassette deck
Track system 4-track, 2-channel
Heads
(DECK A) REC/PLAY Solid Permaloy head
Erasing Double-gap ferrite head
(DECK B) PLAY Solid Permaloy head
Motors
(DECK A) Capstan/reel table drive
2 speed electronically controlled DC motor
(DECK B) Capstan/reel table drive
2 speed electronically controlled DC motor
Recording system AC bias
Bias frequency 80 kHz
Erasing system AC erase
Tape speed 4.8 cm/sec. (1-7/8 ips)
Frequency response (w/o Dolby N.R.)
METAL 20 Hz~16 kHz (±15 dB)
30 Hz~15 kHz (DIN)
CrO_2 20 Hz~15 kHz (±15 dB)
30 Hz~15 kHz (DIN)
NORMAL 20 Hz~15 kHz (±15 dB)
30 Hz~15 kHz (DIN)
S/N (signal level = max recording level, CrO_2 type tape)
Dolby C NR on 74 dB (CCIR)
Dolby B NR on 66 dB (CCIR)
NR off 56 dB (A weighted)
Wow and flutter 0.08% (WRMS)
Fast Forward and Rewind Time
Approx. 105 seconds with C-60 cassette tape
Input sensitivity and impedance
LINE 60mV/47 kΩ
Output voltage and impedance
LINE 400mV/3,2 kΩ
HEADPHONES 30 mV/8 Ω

■ GENERAL

Power consumption 18W
Power supply
For Australia AC 50 Hz/60 Hz, 240V
For continental Europe AC 50 Hz/60 Hz, 220V
For others AC 50 Hz/60 Hz, 110V/127V/220V/240V
Dimensions (W×H×D) 430 × 120× 328 mm
Weight (16-15/16" × 4-23/32" × 8-31/32")
3.8 kg (8.4 lb.)

Note:
Specifications are subject to change without notice.
Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

Technics

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■ CONTENTS

	Page
• Location of Controls	2
• Operation	3, 4
• Disassembly Instructions	5
• Measurement and Adjustment Methodes	6~8
• Microcomputer Terminal Function and Waveform	9~11
• Terminal Guide of IC's Transistors and Diodes	11
• Wiring Connection Diagram	12
• Resistors and Capacitors	13, 14
• Electrical Parts List	14, 15
• Printed Circuit Board	16~20
• Schematic Diagram	21~24
• Block Diagram	25, 26
• Mechanical Parts Location	27~29
• Cabinet Parts Location	30~32

■ LOCATION OF CONTROLS

• Headphones jack (phones)

• Power "standby ⏻, on" switch (power "standby ⏻, on")

This switch turns on and off the secondary circuit power only. The unit is in the "stand-by" condition when this switch is set to the "standby ⏻" position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

Tape-select indicators (Auto Tape Select)

The tape selector setting changes automatically, and the indicator indicates the type of tape being used in "DECK A".

"DECK A" counter/reset button (DECK A counter/reset)

This indicates the amount of tape travel of "DECK A". When this button is pressed, the readout will be reset to "000".

Level meters (peak level)

During recording, these meters and digital display indicate the recording level. The level is adjusted by using the recording level control. During playback, they indicate the level of the recorded sound. Note that the digital display holds the maximum level for about 2 seconds.

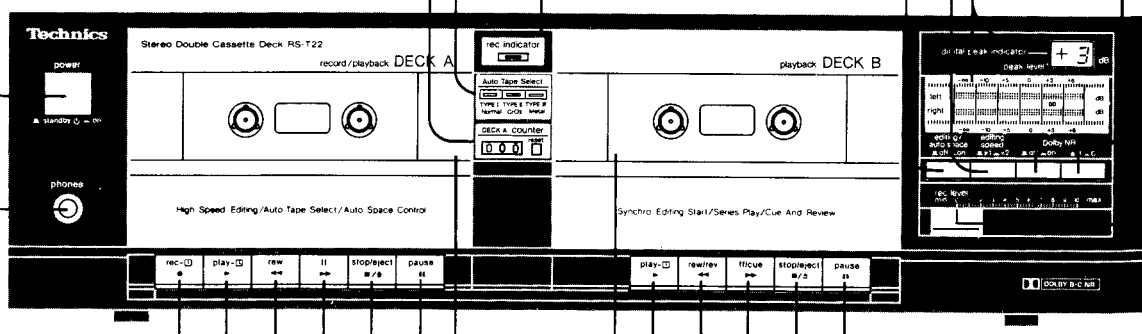
Editing tape-speed selector (editing speed)

Recording level control (rec level)

Editing/auto space switch (editing/auto space)

Dolby noise-reduction switches (Dolby NR)

Recording indicator (rec indicator)



When using "DECK A"

Record button (rec-⏲ / ●)

Playback button (play-⏲ /▶)

Rewind button (rew/◀◀)

Fast-forward button (ff/▶▶)

Stop/eject button (stop/eject/■/▲)

Pause button (pause/▮▮)

Cassette holder

When using "DECK B"

Pause button (pause/▮▮)

Stop/eject button (stop/eject/■/▲)

Press this button to stop the tape during recording or playback, and to open the cassette holder.

Fast-forward/cue button (ff/cue/▶▶)

Rewind/review button (rew/rev/◀◀)

Playback button (play-⏲ /▶)

Cassette holder

D

■ OPERATION

Playback

Notes:
- "DECK A" and "DECK B" cannot both be used for playback at the same time.
- Do not press the stop/eject button while the tape is moving, doing so might cause a malfunction or damage the tape.

1 "on" (■→ ▬)

2 **Select the noise-reduction system.**
(See below.)

When using "DECK A"

3 **Press, then insert the tape cassette.**

4 **Press.**
(Playback will begin.)

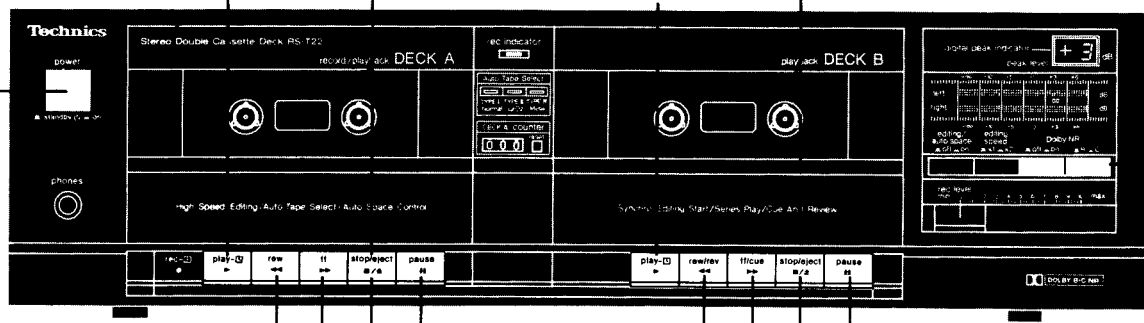
The side to be played back facing outward.

Part where tape is exposed facing downward.

When using "DECK B"

3 **Press, then insert the tape cassette.**

4 **Press.**
(Playback will begin.)



Press to rewind the tape.

Press to advance the tape.

Press to stop the tape.

Press to stop the tape temporarily.

Press to stop the tape temporarily.

Press to stop the tape.

When in the stop mode, press this button to advance the tape rapidly. When in the play mode, press this button to fast forward the tape while monitoring the sound.

When in the stop mode, press this button to rewind the tape rapidly. When in the play mode, press this button to rewind the tape while monitoring the sound.

Dolby noise-reduction system

The Dolby-noise reduction system boosts low level high frequency signals during recording. During playback, these high frequency signals are reduced by a corresponding amount and, therefore, noise is reduced.
This unit uses the Dolby B-type and C-type of noise-reduction systems.

■ Examples of uses of the noise-reduction systems

Dolby B system
Noise is reduced to about one-third.
Use this system when playing back tapes recorded by the Dolby noise-reduction system, such as prerecorded music tapes, etc.

Dolby C system
Hiss noise is reduced to about one-tenth.
Use this system when recording sound sources that have a wide dynamic range and good tone quality, such as FM broadcasts of live performances, etc., and for playing back such tapes.

Dolby noise-reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Series playback

Continuous playback from one side of a tape in "DECK A" to one side of a tape in "DECK B" (or from "DECK B" to "DECK A") is possible.

- **When starting from "DECK A"**
  First press the playback button on "DECK A", and then press the playback button on "DECK B".

- **When starting from "DECK B"**
  First press the playback button on "DECK B", and then press the playback button on "DECK A".

Automatic tape selector system

This cassette deck automatically detects the type of tape being used, and adjusts for the proper bias and equalization.
The tape-select indicator indicates the type of tape being used in "DECK A".
"Metal" lights when no tape has been loaded in the cassette holder of "DECK A".

D

Recording

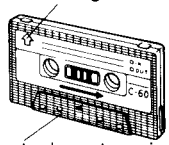
Your attention is drawn to the fact that recording pre-recorded tapes or other published or broadcast material may infringe copyright laws.

Note:
Only "DECK A" can be used for recording. "DECK B" has no record capability.

1 **"on" (■→ ▬)**

2 **Press, then insert the tape to be used for recording.**

The side to be recorded facing outward.



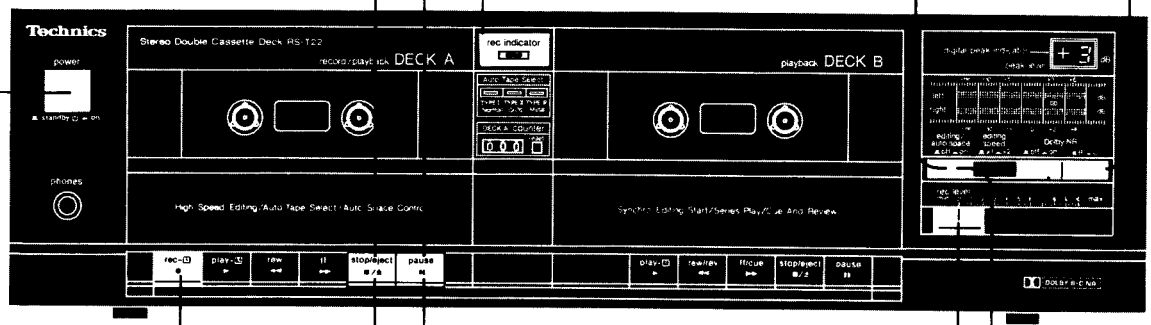
Part where tape is exposed facing downward.

3 **Press.**

Recording indicator

4 **Select the noise-reduction system.**

5 **"off" (▬→ ■)**



6 **Press.**
The recording indicator will be illuminated. (Recording stand-by mode)

7 **Begin the program source to be recorded.**

Press to stop the recording.

8 **Adjust the recording level.**
(See below.)

9 **Press.**
(Recording will begin.)

Press to temporarily stop the recording.

Press to make non-recorded spaces between tunes.
(See below.)

To make non-recorded spaces between tunes

With this unit, by following the steps below, it is possible to make non-recorded spaces (four seconds long) between tunes.

- **During recording, press the editing/auto space switch.**
  After about 4 seconds, "DECK A" will automatically change to the recording stand-by mode.
- **To start the recording again, set the switch to the "off" position.** (Recording will begin.)

Note:
Sounds from the deck cannot be heard while the editing/auto space switch is pressed in, so set the tape-monitor switch (on the receiver, etc.) to the "source" position to be able to monitor the sound.

To erase recorded sounds

1. **Insert the recorded tape cassette into the cassette holder of "DECK A".**
2. **Set the Dolby noise-reduction switch to the "off" position.**
3. **Set the recording level control to the minimum ("0") position.**
4. **Press the record button, and then let the tape run.**

Note that any sounds on the tape will be automatically erased if a new recording is made on that part of the tape.

Adjustment of the recording level

The numbers which you should use as a guide for the adjustment of the tape level will differ depending upon the type of tape used.

Tape type	Normal (TYPE I) CrO_2 (TYPE II)	Metal (TYPE IV)
Level (Dolby NR off)	0dB	+3dB
Level (Dolby NR on)	+3dB	+6dB

D

ORDER NO. HAD8704096C9-A

Dolby B-C NR-Equipped Stereo Cassette Deck

DEUTSCH

Verwenden Sie bitte diese Broschüre zusammen mit der Service-Anleitung für das Modell Nr. RS-T22.

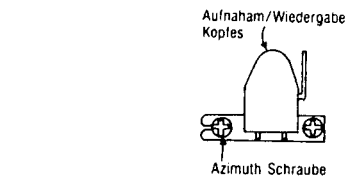
■ MESSUNGEN UND EINSTELL METHODEN

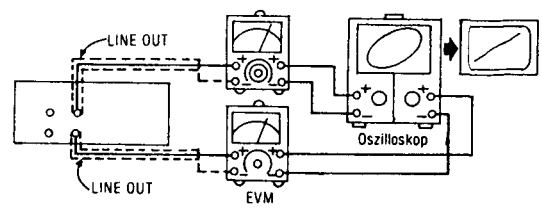
Meßinstrumente

- Elektronisches Voltmeter(EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Kpofazimut-Justierung

1.Den Azimut-Justierungsteil (8kHz, -20dB) des Testbandes (QZZCFM) wiedergeben und die Winkeljustierungs-Einstellschraube so verstellen, daß der Ausgang vom linken und rechten Kanal maximal wird. (Wenn die Justierpositionen for den linken und rechten Kanal verschieden sind,ist eine Position zu finden, wo der Ausgang des linken und rechten Kanals ausgelichen ist, und dann ist die Justierung durchzuführen.)
2.Gleichzeitig eine Lissajous-Wellenform ziehen und Phasenablenkung eliminieren.
3.Nach erfolgter Justierung sind die Bandführungs-Höhen-und-Winkeljustierschrauben zu sichern.





Bandgeschwindigkeits-Justierung

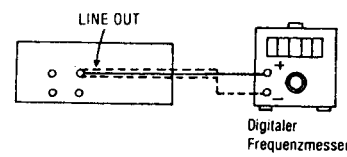
-- Schneller Bandlauf --

1.Stellen Sie den Bandgeschwindigkeitswählschalter auf **"X2"** und schließen Sie Deck A an TP1 und TPN1 und Deck B an TP2 und TPN2 kurz.
2.Spielen Sie den Mittelteil des Testbandes (QZZCWAT) ab.
3.Justieren Sie VR803 von Deck A so, daß die Abgabewerte innerhalb der Standardwerte liegen.

-- Normaler Bandlauf --

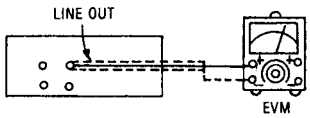
4.Stellen Sie den Bandgeschwindigkeitswählschalter auf **"X1"** und unterbrechen Sie Deck A in TP1 und TPN1 und Deck B in TP2 und TPN2.
5.Spielen Sie den Mittelteil des Testbandes (QZZCWAT) ab.
6.Justieren Sie VR802 von Deck B und VR801 von Deck A so, daß die Abgabewerte innerhalb der Standardwerte liegen.

Standardwert: 3000±15Hz(Normal), 6000±630Hz(Schnell)



Wiedergabe-Frequenzgang

1. Den Wiedergabe-Frequenzgangteil (315Hz, 12,5kHz~63Hz, -20dB) des Testbandes (QZZCFM) wiedergeben.
2. Überprüfen, ob der Frequenzgang innerhalb des in **Abb. 1** für den linken und rechten Kanal gezeigten Bereichs liegt.



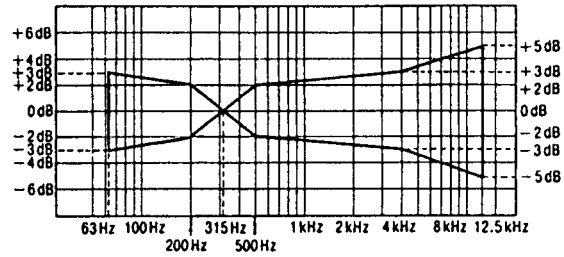
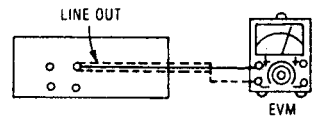


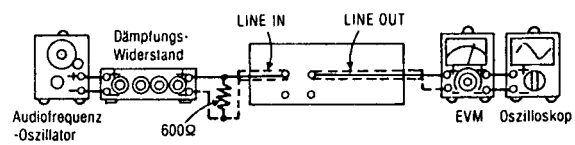
Abb. 1

Justierung des Wiedergabe-Verstärkungsgrades

1. Den für den Wiedergabe-Verstärkungsgrad justierten Teil (315Hz, 0dB) des Testbandes (QZZCFM) wiedergaben.
2. Den VR1 (linker Kanal) [(VR2 (rechter Kanal))] für Deck B und den VR3 (linker Kanal) [(VR4 (rechter Kanal))] für Deck A so justieren, daß die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 0,4 ± 0,02V





Gesamtfrequenzgang

1. Legen Sie eine normale Leerkassette (QZZCRA) ein und nehmen ein Signal (50Hz ~ 12.5kHz) von 20dB auf, das durch das Referenzeingabepegelsignal (1kHz, -24dB) gedämpft wird.
2. Das in Schritt 1 autgezeichnete Signal wiedergeben und prufen, ob der Pegel jeder Ausgangsfrequenz im Bereich liegt, der in **Abb. 2** in Vergleich zur Referenzfrequenc (1kHz) gezeigt wird.
3. Falls er nicht im Standard-Bereich liegt, ist der Vormagnetisierungs- strom mit VR301 (linker Kanal) [(VR302 (rechter Kanal))] für Deck A so zu justieren, daß der Frequenzpegel innerhalb des standards zuliegen kommt.
4. Anschließend das auf der CrO_2 -Leerband-Cassette (QZZCRX) und der Reineisenband-Leercassette (QZZCRZ) aufgezeichnete Signal auf 15kHz erhöhen und auf gleiche Weise justieren, Wie vorgehend beschrieben. Dann überprüfen, ob der Frequenzpegel innerhalb des in **Abb. 3** gezeigten Bereichs liegt.

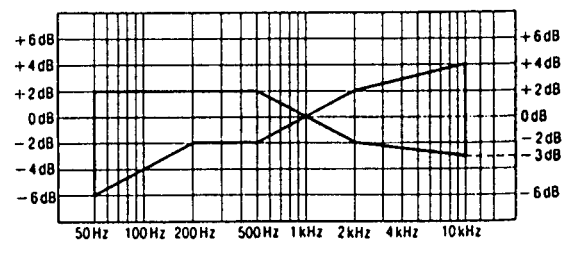


Abb. 2

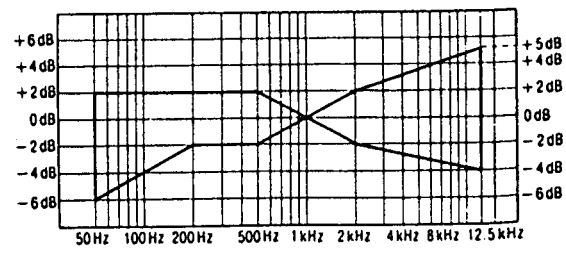
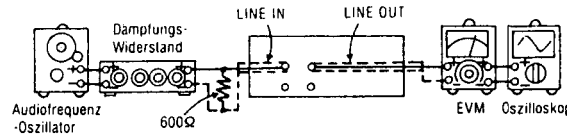


Abb. 3

Justierung des Gesamtverstärkungsgrades

1.Ein Normalband-Leercassette (QZZCRA) einsetzen und im Aufnahmepause- Zustand des Gerätes das Referenzsignal (1kHz, -24dB) eingeben.
2.Die Ausgangsleistung mit dem Dämpfungswiderstand auf 0.4V justieren und dann aufnehmen.
3.Das in Schritt 2 aufgezeichnete Signal wiedergeben und überprüfen, ob die Ausgongsleistung dem Standard-Wert entspricht.
4.Falls sie nicht dem Standard-Wert entspricht, ist der VR5 (linker Kanal) ⟦(VR6 (rechter Kanal))⟧ für Deck A Zu justieren, und dann sind die Schritte(1), (2) und (3) zu Wiederholen, bis die Ausgangsleistung dem Standard-Wert entspricht.

Standard-Wert: 0,4V ± 0,5dB (0,02V)



Dolby-Rauschunterdrückungs-Schaltkreis

1.Eine Normalband-Cassette einsetzen und im Aufnahmepause-Zustand des Gerätes ein 1kHz-Signal eingeben.
2.Mit dem Dämpfungswiderstand so justieren, daß die Ausgangsleistung zwischen Anschluß 7 des IC401 (linker kanal) ⟦(IC402 (rechter Kanal))⟧ und Masse 12,3mV beträgt.

Dolby-B(Dolby-C) (Kodierungseigenschaft)

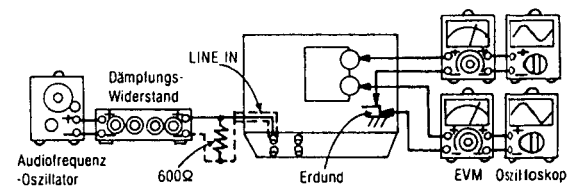
3.Den Rauschunterdrückungs-Schaltkreis (NR) auf "Dolby B(Dolby-C)" einstellen und das Eingangssignal auf 1kHz, 5kHz verändern.
4.Überprüfen, ob die Ausgangsleistung zwischen Anschluß 21 **des** IC401(linker Kanal) ⟦(IC402(rechter Kanal))⟧ und Masse wie vorgeschrieben gegenüber dem Pegel im rauschunterdrückungsfreiem Zustand verändert wird.

Dolby-B :

Standard-Wert: 6 ± 2,5dB(1kHz), 8 ± 2,5dB(5kHz)

Dolby-C :

Standard-Wert: 11,5±2,5dB(1kHz), 8,5±2,5dB(5kHz)



FRANÇAIS

Ceci est à utiliser conjointement avec manuel d'entretien du modèle No. **RS-T22.**

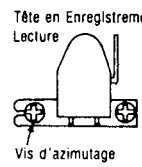
■ METHODES DES MEASURES ET REGLAGES

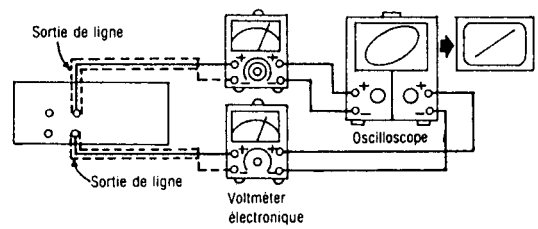
Apparelis de mesurage

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T.(Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Réglage de l'angle des têtes de lecture

1. Faire jouer la partie réglée azimutale (8kHz, -20dB) de la bande d'essai (QZZCFM) et. régler la vis de mise au point azimutale de telle sorte que les puissances de sortie du canal de gauche et du canal de droite soient au maximum.
   (Si les positions de réglage du canal de gauche et du canal de droite sont différentes, trouver une position où les puissances de sortie des canaux de gauche et de droite soient équilibrées, puis effectuer la mise au point.)
2. En même temps, établir une forme d'onde de Lissajous et éliminer la déviation de phase.
3. Après le réglage, bloquer les vis du réglage angulaire et de la hauteur des guides de bande.





Réglage de la vitesse de défilement de la bande

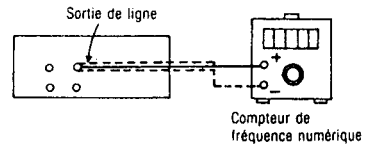
-A grande vitesse-

1. Régler le commutateur de vitesse de défilement de la bande de montage sur "**X2**" et court-circuiter la platine A sur TP1 et TPN1 , et la platine B sur TP2 et TPN2.
2. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
3. Ajuster la platine A sur VR803 de telle sorte que la puissance de sortie soit en deçà de la normale.

-Vitesse normale-

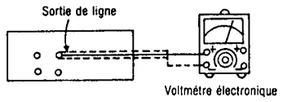
4. Régler le commutateur de vitesse de défilement de la bande de montage sur "**X1**" et mettre hors circuit la platine A sur TP1 et TPN1 et la platine B sur TP2 et TPN2.
5. Faire jouer la partie centrale de la bande d'essai (QZZCWAT).
6. Ajuster la platine B sur VR802 et la platine A sur VR801 de telle sorte que la puissance de sortie soit en deçà de la normale.

Valeur standard: 3000±15Hz(normale); 6000±630Hz(élevée)



Réponse en fréquence de la lecture

1.Faire jouer la partie de la réponse en fréquence de la lecture (315Hz, 12,5kHz~63Hz, -20dB) de la bande d'essai (QZZCFM).
2.Vérifier que la fréquence soit en deçà de la plage montrée à la **Fig.1** , à la fois pour le canal de gauche et le canal de droite.



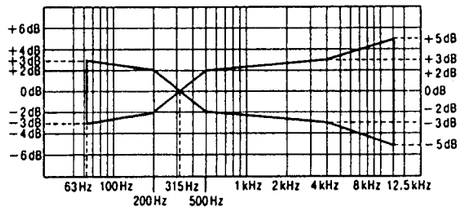
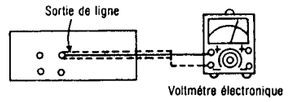


Fig. 1

Réglage d'amplification de la lecture

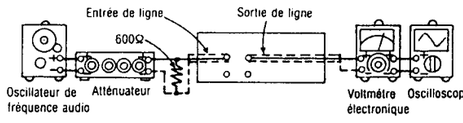
1.Faire jouer la partie réglée d'amplification de la lecture (315Hz, 0dB) de la bande d'essai (QZZCFM).
2.Régler la platineB: VR1 (canal de gauche) ⟦(VR2 (canal de droite))⟧ et la platine A: VR3 (canal de gauche) ⟦(VR4 (canal de droite))⟧ de telle sorte que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: 0,4±0,02V



Réponse en fréquence globale

1.Installer une bande Vierge normale (QZZCRA) et enregistrer en appliquant un signal (50Hz~12,5kHz), 20dB atténuésà partir du signal du niveau déntrée de référence (1kHz, -24dB).
2.Faire jouer le signal enregistré à l'etape 1 et vérifier que le niveau de chaque fréquence de sortie soit en deçà de la plage montrée à la **Fig.2** en comparaison avec la fréquence de référence (1kHz).
3.S'il n'est pas en deçà de la plage standard, régler le courant de polarisation avec platine A: VR301 (canal de gauche) ⟦(VR302 (canal de gauche))⟧ de telle sorte que le niveau de fréquence soit en deçà de la normale.
   - Niveau vers la haut dans la plage de fréquence élevée .....Augmenter le courant de polarisation.
   - Niveau vers le bas dans la plage de fréquence élevée .....Diminuer le courant de polarisation.
4.Après cela, amplifier le signal enregistré sur la bande vierger CrO_2 (QZZCRX) et la bande vierge métallisée (QZZCRZ) jusqu'à 15kHz et régler de la même manière que celle mentionnée ci-dessus. Puis, vérifier que le niveau de fréquence soit en deçà de la plage montrée à la **Fig.3**.



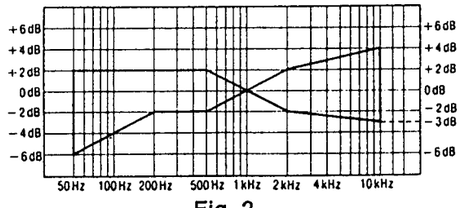


Fig. 2

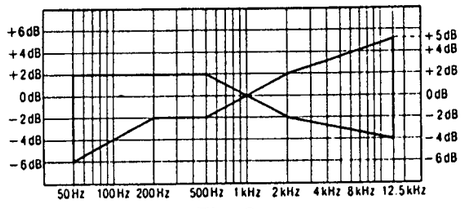
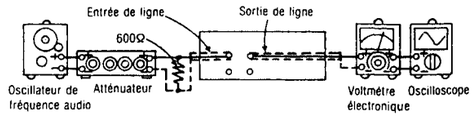


Fig. 3

Réglage d'amplification globale

1.Installer une bande vierge normale (QZZCRA) et appliquer le signal de niveau d'entrée de référence (1kHz, -24dB) sur le mode d'intermission d'enregistrement.
2.Régler la puissance de sortie 0,4V avec l'atténuateur, puis enregistrer.
3.Faire jouer le signal enregistré à l'étape 2 et vérifier que la puissance de sortie soit en deçà de la normale.
4.Si elle n'est pas en deçà de la normale, régler platine A: VR5 (canal de gauche) ⟦(VR6 (canal de droite))⟧ et répéter les étapes (1), (2) et (3) jusqu'à ce que la puissance de sortie soit en deçà de la normale.

Valeur normalisée: 0,4V±0,5dB(0,02V)



Circuit de réduction des bruits Dolby

1.Installer une bande normale et appliquer un signal de 5kHz sur le mode d'intermission d'enregistrement.
2.Régler avec l'atténuateur de telle sorte que la puissance de sortie entre la borne 7 de IC401 (canal de gauche) ⟦IC402 (canal de droite)⟧ et la masse soit de 12,3mV.

-Dolby B(Caractéristiques de codage)-

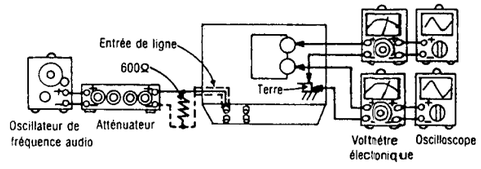
3.Régler le commutateur de réduction des bruits sur "Dolby B" et changer le signal d'entrée sur 1kHz, 5kHz.
4.Vérifier que la puissance de sortie entre la borne 21 de IC401 (canal de gauche) ⟦ IC402 (canal de droite)⟧ et la masse change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.

Valeur normalisée: 6 ± 2,5dB (1kHz), 8 ± 2,5dB (5kHz)

-Dolby C(Caractéristiques de codage)-

5.Régler le commutateur de réduction des bruits sur "Dolby C" et changer le signal d'entrée sur 1kHz, 5kHz.
6.Vérifier que la puissance de sortie entre la borne 21 de IC401 (canal de gauche) ⟦ IC402 (canal de droite)⟧ et la masse change tel qu'il est spécifié à partir du niveau d'entrée sur le mode de sortie de réduction des bruits.

Valeur normalisée: 11,5±2,5dB(1kHz), 8,5±2,5dB(5kHz)



ESPAÑOL

Sirvase utilizarse junto con manual de servicio para el model No. **RS-T22.**

■ METODOS DE AJUSTE Y MEDIDA

Instrumento de medición

- EVM(Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF
- ATT(Atenuador)
- Voltímetro CC
- Resistor(600Ω)

Ajuste acimutal de cabeza

1.Reproducir la parte ajustada de acimut(8kHz, -20dB) de la cinta de prueba(QZZCFM) y regular el tornillo de ajuste de ángulo de manera que las salidas de CH-I y CH-D sean maximizadas. (Cuando las posiciones de ajuste sean diferentes de CH-I y CH-D, encontrar una posición donde las salidas de CH-I y CH-D estén equilibradas y, luego, hacer el ajuste.)
2.Al mismo tiempo, trazar una forma de onda de Lissajous y eliminar la deflexión de fase.
3.Después del ajuste, fije los tornillos de ajuste de altura y ángulo de guía de cinta.

Ajuste de velocidad de cinta

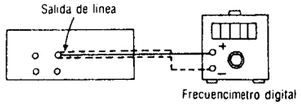
-Alta velocidad-

1.Poner el conmutador de velocidad de cinta de compaginación **"X2"** conectar la Platina A: TP1 y TPN1, Platina B: TP2 y TPN2.
2.Reproducir la parte de en medio de la cinta de prueba (QZZCWAT).
3.Ajustar la Platina A: VR803 de manera que la salida esté dentro de la estándar.

-Velocidad normal-

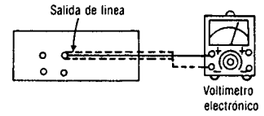
4.Poner el conmutador de velocidad de cinta de compaginación en **"X1"** y abra la Platina A: TP1 y TPN1, Platina B: TP2 y TPN2.
5.Reproducir la parte de en medio de la cinta de prueba(QZZWAT).
6.Ajustar la Platina B: VR802 y Platina A: VR801 de manera que la salide esté dentro de la estándar.

Valor estándar: 3000±15Hz(normal)6000±630Hz(alta)



Respuesta de frecuencia de reproducción

1.Reproducir la parte de respuesta de frecuencia de reproducción (315Hz, 12.5kHz~63Hz,-20dB) de la cinta de prueba(QZZCFM).
2.Comprobar que la frecuencia esté dentro de la gama mostrada en la **Fig.1** tanto para CH-I como para CH-D.



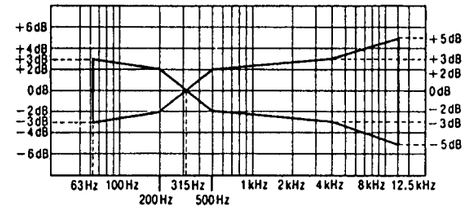
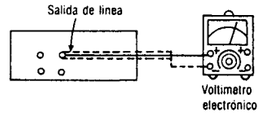


Fig. 1

Ajuste de ganancia de reproducción

1.Reproducir la parte ajustada de la ganancia de reproducción (315Hz, 0dB) de la cinta de prueba (QZZCFM).
2.Ajustar la Platina B: RV1(CH-I) ⟦RV2(CH-D)⟧ y la Platina A: RV3(CH-I) ⟦RV4(CH-D)⟧ de manera que la salida esté dentro de la estándar.

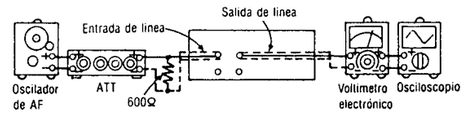
Valor estándar: 0,4±0,02V



Respuesta de frecuencia total

1.Poner una cinta virgen normal(QZZCRA) y grabar aplicando señal (50Hz~12,5kHz), 20dB atenuados de la señal de nivel de entrada de referencia(1kHz, -24dB).
2.Reproducir la señal grabada en el paso 1 y comprobar que el nivel de cada frecuencia de salida esté dentro de la gama mostrada en la **Fig.2** en comparación con la frecuencia de referencia(1kHz).
3.Si no está dentro de la gama estándar, ajustar la corriente de polarización mediante la Platina A: RV301(CH-I) ⟦RV302(CH-D)⟧ de manera que el nivel de frecuencia esté dentro del estándar.
- Subir el nivel en la gama de alta frecuencia
  .... Incrementar la corriente de polarización.
- Bajar el nivel en la gama de alta frecuencia
  .... Disminuir la corriente de polarización.

4.Después de eso, incrementar la señal grabada en la cinta virgen CrO_2 (QZZCRX) y la cinta virgen metálica (QZZCRZ) hasta 15kHz y ajustar de la misma manera como mencionado arriba y comprobar que el nivel de frecuencia esté dentro de la gama mostrada en la **Fig.3**.



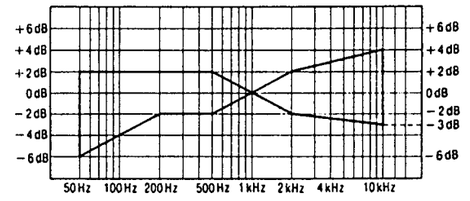


Fig. 2

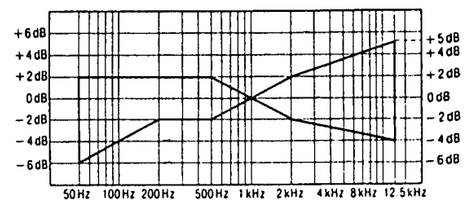
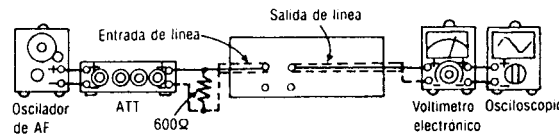


Fig. 3

Ajuste de ganancia total

1.Colocar una cinta virgen normal(QZZCRA) y aplicar la señal de nivel de entrada de referencia(1kHz, -24dB) en la modalidad de pausa de grabación.
2.Ajustar la salida 0,4V mediante atenuador y luego, grabar.
3.Reproducir la señal grabada en el paso 2 y comprobar que la salida esté dentro de la estándar.
4.Si no está dentro de la estándar. ajustar la Platina A: RV5 (CH-I) [(RV6 (CH-D))] y repetir el paso (1), (2) y (3) hasta que la salida esté dentro de la estándar.

Valor estándar: 0,4V±0,5dB(0,02V)



Circuito RR Dolby

1.Colocar una cinta normal y aplicar señal 5kHz en la modalidad de pausa de grabación.
2.Ajustar mediante atenuador de manera que la salida entre terminal 7 de IC401(CH-I) [(IC402(CH-D))] y tierra sea 12,3mV.

-Dolby B(Codificar característica)-

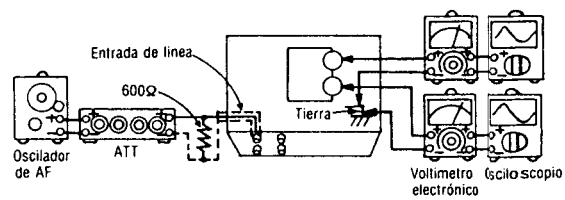
3.Poner el interruptor RR en "Dolby B" y cambiar la señal de entrada a 1kHz, 5kHz.
4.Comprobar que la salida entre terminal 21 de IC401 (CH-I) [(IC402(CH-D))] y tierra cambie como especificado por el nivel en la modalidad de salida RR.

Valor estándar: 6±2,5dB(1kHz), 8±2,5dB(5kHz)

-Dolby C (Codificar característica)-

5.Poner el interruptor RR en "Dolby C" y cambiar la señal de entrada 1kHz, 5kHz.
6.Comprobar que la salida entre terminal 21 de IC401 (CH-I) [(IC402(CH-D))] y tierra cambie como especificado por el nivel en la modalidad de salida RR.

Valor estándar: 11,5±2,5dB(1kHz), 8,5±2,5dB(5kHz)



Printed in Japan
H87040450 SN/IM/AM

■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 4 screws.

Ref. No. 2	How to remove the main P.C.B.
Procedure 1 → 2	1. Remove the 2 screws (❶, ❷). 2. Open the side of back chassis, and then pull down it. 3. Remove the one screw (❸). 4. Remove the 4 tabs aside.

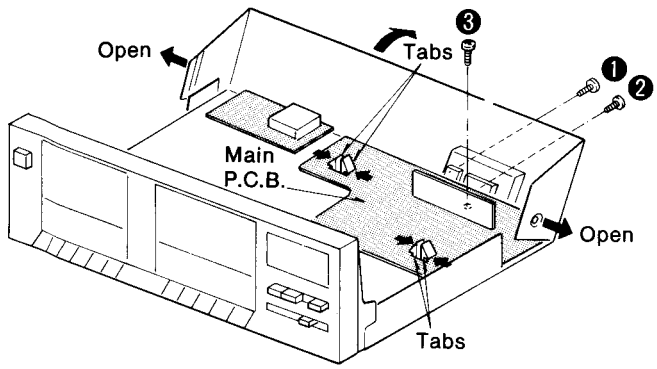


Fig. 1

Ref. No. 3	How to remove the mechanism unit
Procedure 1 → 3	1. Remove the 6 screws (❶~❻). 2. Push the eject button. 3. Remove the counter belt (for mechanism unit of DECK Ⓐ).

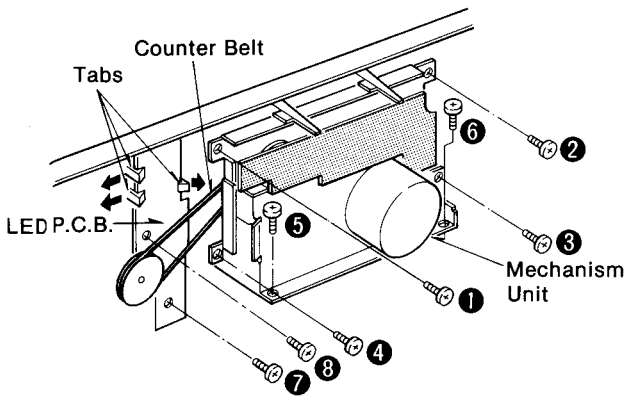


Fig. 2

Ref. No. 4	How to remove the LED meter P.C.B. and VR/SW P.C.B.
Procedure 1 → 4	1. Remove the 2 screws (❶, ❷). 2. Push the one tab aside, and then remove the VR/SW P.C.B. 3. Remove the one screw (❸). 4. Push the 3 tabs aside, and then remove the LED meter P.C.B.

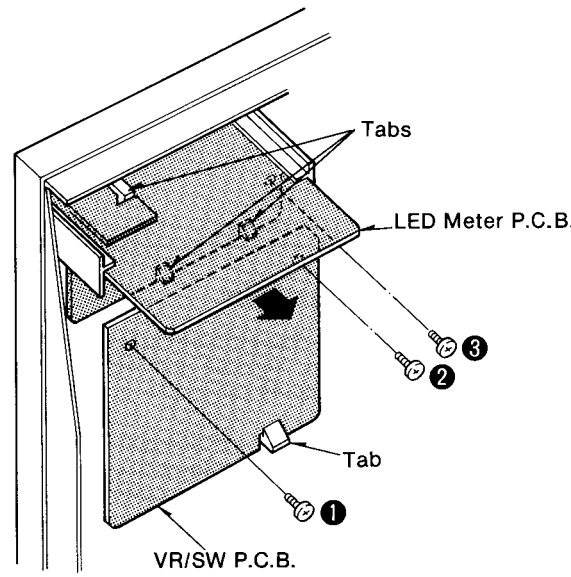


Fig. 3

Ref. No. 5	How to remove the LED P.C.B.
Procedure 1 → 5	1. Remove the 2 screws (❼, ❽). (fig. 2) 2. Remove the 3 tabs aside. (fig. 2)

Ref. No. 6	How to remove the front panel
Procedure 1 → 3 → 4 → 5 → 6	1. Remove the 5 screws (❶~❺). 2. Open the sides of front panel, and then pull it to yourself.

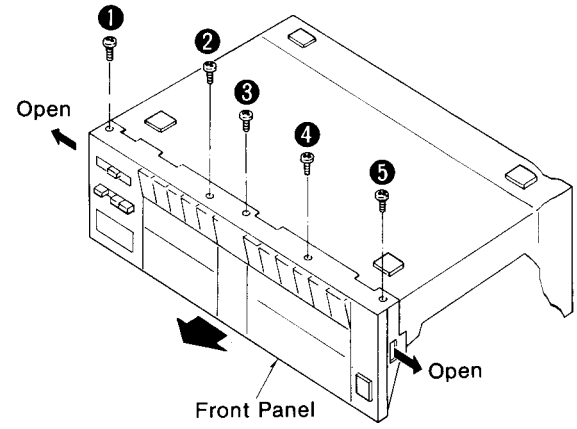


Fig. 4

D

■MEASUREMENT AND ADJUSTMENT METHODES

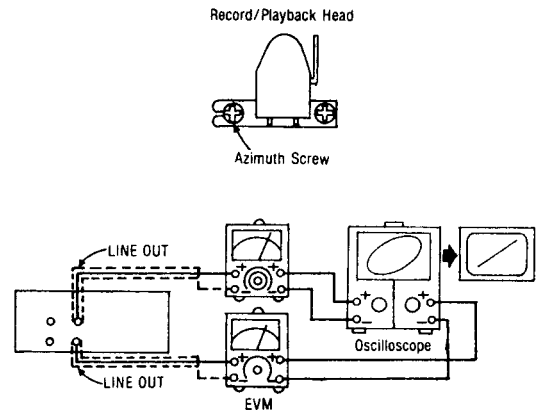
Measurement Condition
- Input level controls; Maximum
- Editing switch; Off
- NR switch; Off
- Editing tape speed switch; X1
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature 20±5°C(68±9°F)

Measuring instrument
- EVM(Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator
- ATT(Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape
- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250kHz, 125kHz, 63kHz, -20dB); QZZCFM
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
  Normal reference blank tape; QZZCRA
  CrO_2 reference blank tape; QZZCRX
  Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT

1.Playback the azimuth adjusted part(8kHz, -20dB) of the test tape(QZZCFM) and regulate the angle adjusting screw so that the outputs of L-CH and R-CH are maximized.
(When the adjusting positions are different with L-CH and R-CH, find a position where the outputs of L-CH and R-CH are balanced, and then make the adjustment.)
2.At the same time, obtain a lissajous waveform and eliminate phase deflection.
3.After adjustment, lock the tape guide height and angle adjustment screws.

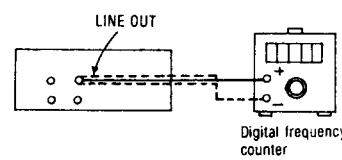


TAPE SPEED ADJUSTMENT

High speed
1.Set the editing tape speed switch to **"X2"** and connect the Deck A = TP1 and TPN1, Deck B = TP2 and TPN2.
2.Playback the middle part of the test tape (QZZCWAT).
3.Adjust Deck A = VR803 so that the output is within the standard.

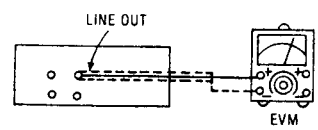
Normal speed
4.Set the editing tape speed switch to **"X1"** and open the Deck A = TP1 and TPN1, Deck B = TP2 and TPN2.
5.Playback the middle part of the test tape (QZZCWAT).
6.Adjust Deck A = VR801 and Deck B = VR802 so that the output is within the standard.

Standard value: 3000±15Hz(Normal), 6000±630Hz(High)



PLAYBACK FREQUENCY RESPONSE

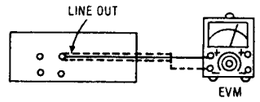
1.Playback the playback frequency response part (315Hz, 12.5kHz~ 63Hz, -20dB) of the test tape (QZZCFM).
2.Check that the frequency is within the range shown in **Fig. 1** for both L-CH and R-CH.
(See page 8.)



D

PLAYBACK GAIN ADJUSTMENT

1.Playback the playback gain adjusted part (315Hz, 0dB) of the test tape (QZZCFM).
2.Adjust Deck B = VR1(L-CH) ([VR2(R-CH)]) and Deck A = VR3(L-CH) ([VR4(R-CH)]) so that the output is within the standard.

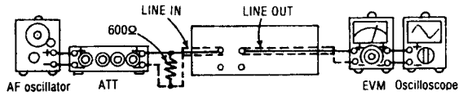


Standard value: 0.4±0.02V

OVERALL FREQUENCY RESPONSE

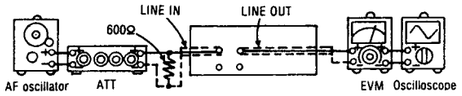
1.Set a normal blank tape (QZZCRA) and record by applying signal (50Hz ~ 12.5kHz), 20dB attenuated from the reference input level signal (1kHz, -24dB).
2.Playback the signal recorded in step 1, and check that the level of each output frequency is within the range shown in **Fig.2** in comparison with the reference frequency (1kHz).
3.If it is not within the standard range, adjust the bias current by Deck A= VR301(L-CH) ([Deck A= VR302(R-CH)]) so that the frequency level is within the standard.
- Level up in high frequency range.....Increase the bias current.
- Level down in high frequency range...Decrease the bias current.

4.After that, increase the signal recorded on CrO_2 blank tape(QZZCRX) and metal blank tape(QZZCRZ) up to 14kHz and adjust in the same way as mentioned above and check that the frequency level is within the range shown in **Fig.3**



OVERALL GAIN ADJUSTMENT

1.Set a normal blank tape (QZZCRA) and apply the reference input level signal (1kHz, -24dB) in record pause mode.
2.Adjust the output 0.4V by attenuator and then record.
3.Playback the signal recorded in step 2, and check that the output is within the standard.
4.If it is not within the standard, adjust Deck A= VR5(L-CH) ([Deck A= VR6(R-CH)]) and repeat the step (1), (2) and (3) until the output is within the standard.



Standard value: 0.4V ± 0.5dB(0.02V)

DOLBY NR CIRCUIT

1.Set a normal tape and apply 1kHz signal in record pause mode.
2.Adjust by attenuator so that the output between terminal 7 of IC401 (L-CH) ([IC402(R-CH)]) and ground is 12.3mV.

-Dolby B (Encode characteristic)-

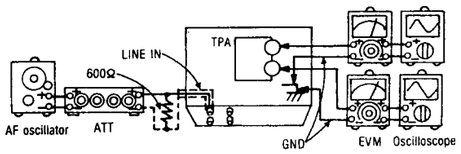
3.Set NR switch to "Dolby B" and change the input signal to 1kHz, 5kHz.
4.Check that the output between terminal 21 of IC401(L-CH) ([IC402 (R-CH)]) and ground change as specified from the level in NR out mode.

Standard value: 6±2.5dB(1kHz), 8±2.5dB(5kHz)

-Dolby C (Encode characteristic)-

5.Set NR switch to "Dolby C" and change the input signal to 1kHz, 5kHz.
6.Check that the output between terminal 21 of IC401(L-CH) ([IC402 (R-CH)]) and ground change as specified from the level in NR out mode.

Standard value: 11.5±2.5dB(1kHz), 8.5±2.5dB(5kHz)



Playback frequency response chart

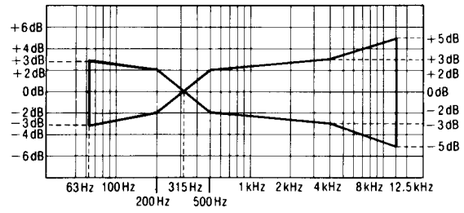


Fig. 1

Overall frequency response chart (Normal)

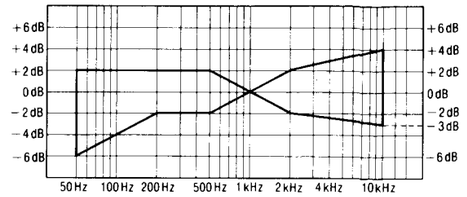


Fig. 2

Overall frequency response chart (CrO_2, Metal)

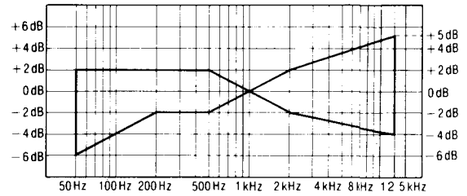
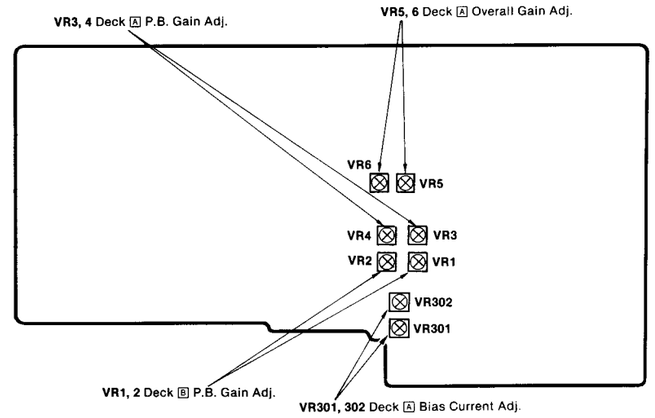


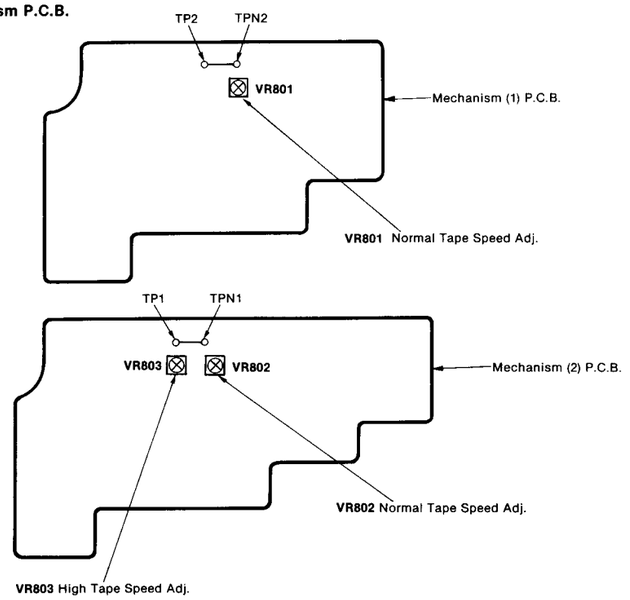
Fig. 3

• Adjustment Point

• Main P.C.B.



• Mechanism P.C.B.

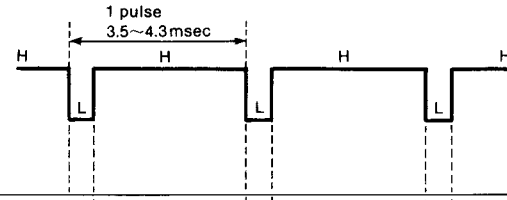
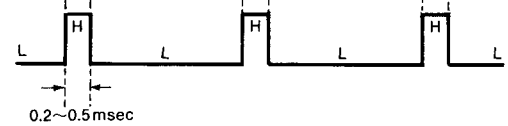


D

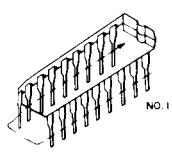
■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC801: MN1402STO)

Terminal No.	Symbol	Name	Function/operation
1	Vss	——	• Connection to GND.
2	CO9	——	• Non connection.
3	CO8	——	• Non connection.
4	CO7	——	• Non connection. Remote control signal (SNS0 Terminal output signal input signal) CO7 Terminal output signal "H" → "H" (output) "L" → One pulse signal H L H 60~80msec
5	CO6	Direct muting (DMT) signal output	• "L" in mute on (STOP, FF/REW, CUE/REV and each selector), "H" in mute off (REC, PLAY). • DMT Output timing of each selector. 10~11msec EO0, EO2, EO3 Output signal CO6 (DMT) Output signal 400~500msec
6	CO5	Muting off signal output of playback AMP	• Deck [B] "L" in CUE/REV, "H" in other.
7	AI3	Reading of input switch state deck [B] auto tape selector (S904)	• "L" when auto tape selector is on mode. • "H" when auto tape selector is off mode.
8	AI2	Reading of input switch state deck [B] FF/REW (S902)	• "L" when FF/REW switch is on mode. • "H" when FF/REW switch is off mode.

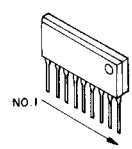
Terminal No.	Symbol	Name	Function/operation
9	AI1	Reading of input switch state deck [A], deck [B] motors (S906, S903)	• DO0 output (Scan [A]) signal → "L" Deck [A]... "L" in motor switch on, "H" in motor switch off. • DO1 output (Scan [B]) signal → "L" Deck [B]... "L" in motor switch on, "H" in motor switch off.
10	AI0	Reading of input switch state deck [A], deck [B] PLAY (S905, S901)	• DO0 output (Scan [A]) signal → "L" Deck [A]... "L" in PLAY switch on, "H" in PLAY switch off. • DO1 output (Scan [B]) signal → "L" Deck [B]... "L" in PLAY switch on, "H" in PLAY switch off.
11	BI3	Reading of input switch state editing (S1)	• "L" when editing switch is on mode. • "H" when editing switch is off mode.
12	BI2	Reading of input switch state Tape speed selector (S2)	• "L" when tape speed selector is on mode. • "H" when tape speed selector is off mode.
13	BI1	Reading of input switch state deck [A] auto tape selector (S908)	• "L" when auto tape selector is on mode. • "H" when auto tape selector is off mode.
14	BI0	Reading of input switch state deck [A] REC (S907)	• "H" when REC switch is on mode. • "L" when REC switch is off mode.
15	EO0	Mode selector deck [A]	• "L" in PLAY mode, "H" in other mode.
16	EO1	Playback equalizer (120μs/70μs) selector	• "L" in 120μs mode, "H" in 70μs mode.
17	EO2	Tapespeed (X1/X2) selector	• "L" in normal speed (X1), "H" in high speed (X2).
18	EO3	Dolby IC mode selector (REC/PLAY)	• "L" in REC mode, "H" in PLAY mode.
19	$\overline{RST}$	Reset terminal	• Used to reset the microcomputer when power is thrown in. • Reset at "L".
20	TST	——	• Connection to GND.
21	DO3	Motor selector deck [B]	• "H" in motor deck [B] off, "L" in motor deck [B] on.
22	DO2	Motor selector deck [A]	• "H" in motor deck [A] off, "L" in motor deck [A] on.

Terminal No.	Symbol	Name	Function/operation
23	DO1	Scan [B]	• Scan signal for reading of PLAY switch input. 
24	DO0	Scan [A]	 • Scan signal for reading of REC switch input.
25	SNS0	——	• Non connection.
26	SNS1	——	• Non connection.
27	V_{DD}	Power supply terminal	• Operative on 5±0.5 volts.
28	OSC	Clock Oscillation	• Clock oscillation of about 300kHz.

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

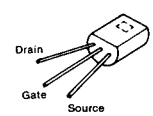


M50725-426SP	30 Pin
AN6888	18 Pin
TEA0665	28 Pin
MN1402STO	28 Pin
AN7016K	30 Pin

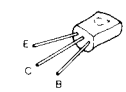


MN6634	9 Pin
M5218L	8 Pin

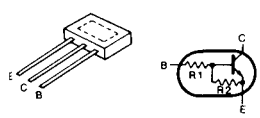
2SJ40CD
2SK381



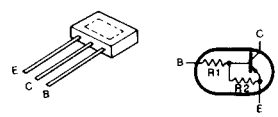
2SB621A-R
2SD592AN CQ

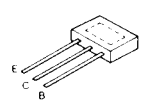


UN4211

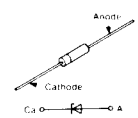


UN4113, UN4114

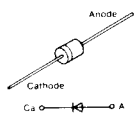




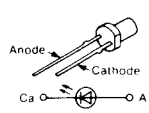
2SA1309AQS
2SC3311-Q
2SD1330R
2SA1253R
2SD1450R



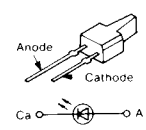
MA4082M
MA4062-M
MA4075M
MA4100M



MA165
SVD1SR35200



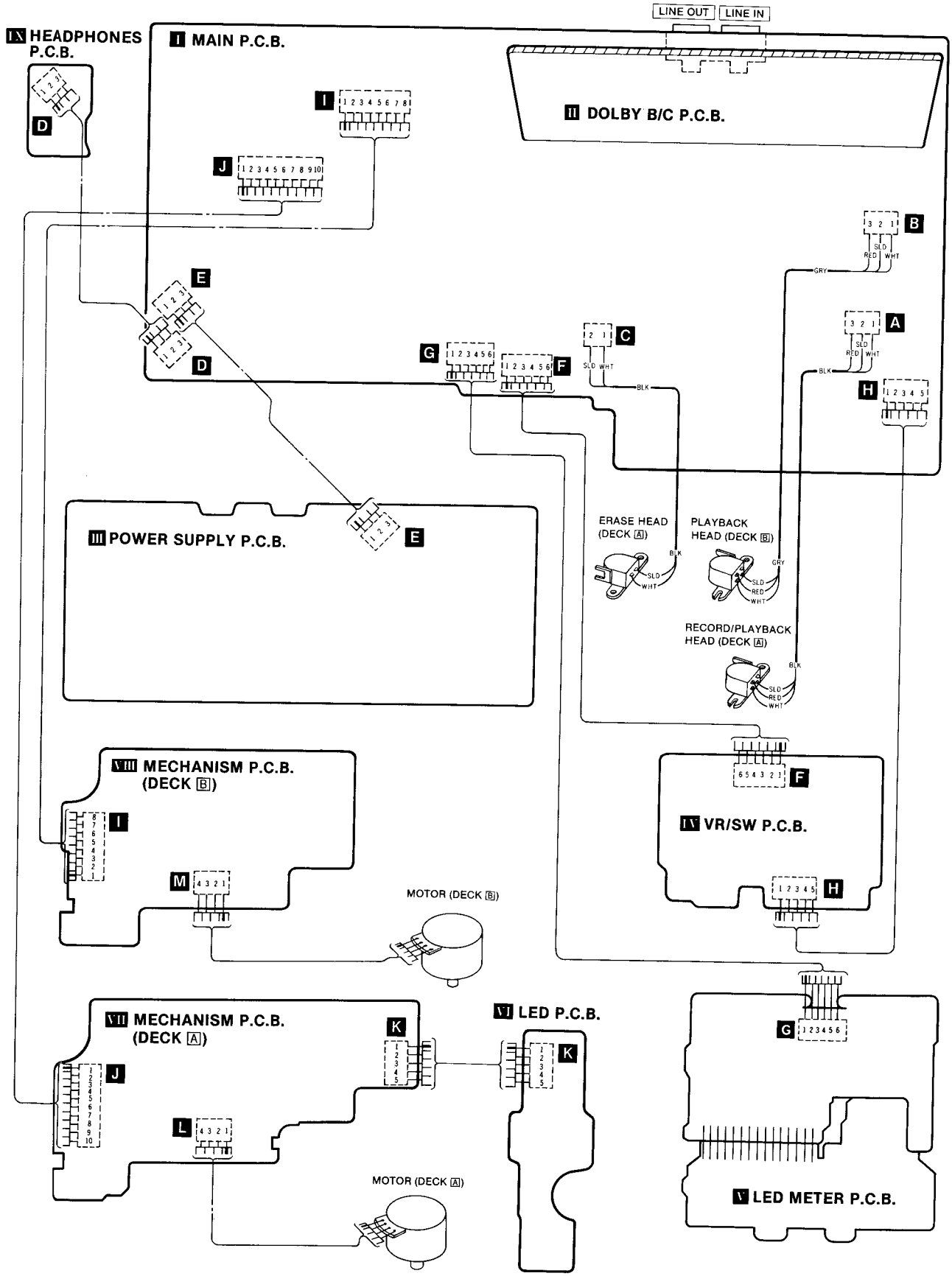
LN463YCPPU (YEL)
LN863RCPP (RED)



LN846RP (RED)
LN346GP (GRN)
LN446YP (YEL)

D

■ WIRING CONNECTION DIAGRAM



D

■ RESISTORS & CAPACITORS

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value

ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value 47x10¹ (ohm)

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	330
Type	Voltage	Peculiarity	Value (33x10⁰ microfarad)

Resistor Type	Wattage	Tolerance
ERD : Carbon ERG : Metal Oxide ERX : Metal Film ERQ : Fuse Type Metal ERD☐ L : Carbon (chip) ERO☐ K : Metal Film (chip) ERC : Solid	10 : 1/8W 12 : 1/2W 25 : 1/4W 1A : 1W 18 : 1/8W S2 : 1/4W S1 : 1/2W 2F : 1/4W 50 : 1/2W 2A : 2W	J : ±5% F : ±1% G : ±2% K : ±10%

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic ECCD : Ceramic ECKD : Ceramic ECQM : Polyester ECQP : Polyproylene ECG : Ceramic ECEA☐☐☐N: Non Polar Electrolytic QCU☐ : Ceramic (Chip Type) ECUX : Ceramic (Chip Type) ECF : Semiconductor EECW : Liquid electrolyte double layer capcitor	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1H : 50V 1V : 35V 50 : 50V 05 : 50V 2H : 500V 2A : 100V 1 : 100V KC : 400V AC KC : 125VAC (UL) 1J : 63V	C : ±0.25pF J : ±5% K : ±10% Z : +80% −20% P : +100% −0% M : ±20% D : ±0.5pF G : ±2%

Ref. No.	Part No.	Part Code
RESISTORS		
R1, R2	ERDS2TJ101	001 152 2421 0
R3, R4	ERDS2TJ101	001 152 2421 0
R5, R6	ERDS2TJ101	001 152 2421 0
R7, R8	ERDS2TJ225	001 152 3149 3
R9, R10	ERDS2TJ820	001 152 2453 2
R11, R12	ERDS2TJ392	001 152 2439 0
R13, R14	ERDS2TJ272	001 152 2354 4
R15, R16	ERDS2TJ122	001 152 2423 8
R17, R18	ERDS2TJ332	001 152 2357 1
R19, R20	ERDS2TJ154	001 152 2427 4
R21, R22	ERDS2TJ273	001 152 2436 3
R23, R24	ERDS2TJ472	001 152 2362 4
R25, R26	ERDS2TJ102	001 152 2346 4
R27, R28	ERDS2TJ330	001 152 2355 3
R29, R30	ERDS2TJ472	001 152 2362 4
R31, R32	ERDS2TJ182	001 152 2352 6
R33, R34	ERDS2TJ272	001 152 2354 4
R37, R38	ERDS2TJ332	001 152 2357 1
R39, R40	ERDS2TJ103	001 152 2347 3
R41, R42	ERDS2TJ152	001 152 2350 8
R43, R44	ERDS2TJ182	001 152 2352 6
R45	ERDS2TJ271	001 152 2435 4
EK, XL		
R45	ERDS2TJ330	001 152 2355 3
E, EG, EH, XA, PA, PE, XB		
R46	ERDS2TJ271	001 152 2435 4
EK, XL		
R46	ERDS2TJ330	001 152 2355 3
E, EG, EH, XA, PA, PE, XB		
R47, R48	ERDS2TJ682	001 152 2365 1
R49, R50	ERDS2TJ154	001 152 2427 4
E, EH, EK, XL, XA, XB, PA, PE		
R51, R52	ERDS2TJ223	001 152 2432 7
R53, R54	ERDS2TJ103	001 152 2347 3
R55, R56	ERDS2TJ563	001 152 2446 1
EK, XL		
R57, R58	ERDS1FJ151	001 152 2512 8
EK, XL		
R59, R60	ERDS2TJ470	001 152 2442 5
EK, XL		
R301	ERDS2TJ1R0	001 152 2419 4
R302, R303	ERDS2TJ563	001 152 2446 1
R304	ERDS1FJ100	001 152 2612 5
EK, XL		
R304	ERDS2TJ100	001 152 2420 1
R305	ERDS1FJ100	001 152 2612 5
EK, XL		
R305	ERDS2TJ100	001 152 2420 1
R308	ERDS2TJ561	001 152 2364 2
R309	ERDS1FJ220	001 152 2622 3
EK, XL		
R309	ERDS2TJ220	001 152 2430 9
E, EG, EH, XA, PA, PE, XB		
R310	ERDS2TJ331	001 152 2356 2
R401, R402	ERDS2TJ242	001 152 3150 0
R403, R404	ERDS2TJ562	001 152 2445 2
R405, R406	ERDS2TJ332	001 152 2357 1
R407, R408	ERDS2TJ102	001 152 2346 4
R409, R410	ERDS2TJ333	001 152 2358 0
R411, R412	ERDS2TJ823	001 152 2456 9
R413, R414	ERDS2TJ471	001 152 2361 5
R415, R416	ERDS2TJ512	001 152 2596 8
R417, R418	ERDS2TJ683	001 152 2450 5
R419, R420	ERDS2TJ222	001 152 2353 5
R421, R422	ERDS2TJ823	001 152 2456 9
R423, R424	ERDS2TJ331	001 152 2356 2
R425, R426	ERDS2TJ101	001 152 2421 0
R427, R428	ERDS2TJ684	001 152 2451 4
R429, R430	ERDS2TJ684	001 152 2451 4
R431, R432	ERDS2TJ562	001 152 2445 2
R601	ERDS2TJ271	001 152 2435 4
EK, XL		
R601	ERDS2TJ470	001 152 2442 5
E, EG, EH, XA, PA, PE, XB		
R602	ERDS2TJ271	001 152 2435 4
EK, XL		
R602	ERDS2TJ470	001 152 2442 5
E, EG, EH, XA, PA, PE, XB		
R603	ERDS2TJ101	001 152 2421 0
R604	ERDS2TJ102	001 152 2346 4
R605	ERDS1FJ100	001 152 2612 5
E, EG, EH, XA, PA, PE, XB		
R605	ERDS2TJ101	001 152 2421 0
EK, XL		
R606	ERDS1FJ220	001 152 2622 3
E, EG, EH, XA, PA, PE, XB		
R606	ERDS2TJ220	001 152 2430 9
EK, XL		
R607, R608	ERDS2TJ102	001 152 2346 4
R609	ERDS2TJ102	001 152 2346 4
R610	ERDS2TJ101	001 152 2421 0
R613	ERDS2TJ563	001 152 2446 1
R621, R622	ERQ14LKR22	001 190 0625 4
EK, XL		
R623, R624	ERG1ANJ560	001 151 0077 9
EK, XL		
R625	ERG1ANJ120	001 151 0023 3
EK, XL		
R626	ERD2FCJ6R8	001 152 2481 8
EK, XL		
R627, R628	ERX1ANJ8R2	001 151 0447 3
EK, XL		
R701, R702	ERDS2TJ101	001 152 2421 0
R703	ERDS2TJ101	001 152 2421 0
R704, R705	ERDS2TJ271	001 152 2435 4
R706	ERDS2TJ271	001 152 2435 4
R707, R708	ERDS2TJ102	001 152 2346 4
R709, R710	ERDS2TJ102	001 152 2346 4
R711, R712	ERDS2TJ102	001 152 2346 4
R713	ERDS2TJ102	001 152 2346 4
R714, R715	ERDS2TJ103	001 152 2347 3
R716	ERDS2TJ122	001 152 2423 8
R717	ERDS2TJ102	001 152 2346 4
R718, R719	ERDS2TJ154	001 152 2427 4
R720	ERDS2TJ154	001 152 2427 4
R721, R722	ERDS2TJ152	001 152 2350 8
R723, R724	ERDS2TJ331	001 152 2356 2
R725	ERDS2TJ183	001 152 2429 2
R727, R728	ERDS2TJ561	001 152 2364 2

Ref. No.	Part No.	Part Code
R801	ERDS2TJ103	001 152 2347 3
R802	ERDS2TJ102	001 152 2346 4
R803	ERDS2TJ103	001 152 2347 3
R804	ERDS2TJ223	001 152 2432 7
R805	ERDS2TJ272	001 152 2354 4
R806	ERDS2TJ332	001 152 2357 1
R807, R808	ERDS2TJ103	001 152 2347 3
R809	ERDS2TJ103	001 152 2347 3
R810	ERDS2TJ563	001 152 2446 1
R811	ERDS2TJ332	001 152 2357 1
R812	ERDS2TJ392	001 152 2439 0
R813	ERDS2TJ272	001 152 2354 4
R814	ERDS2TJ103	001 152 2347 3
R815	ERDS2TJ563	001 152 2446 1
R816	ERDS2TJ184	001 152 2588 8
R817	ERDS2TJ271	001 152 2435 4
R818, R819	ERDS2TJ391	001 152 2360 6
R820	ERDS2TJ103	001 152 2347 3
R821	ERDS2TJ273	001 152 2436 3
R822	ERDS2TJ223	001 152 2432 7
R823	ERDS2TJ152	001 152 2350 8
R824	ERDS2TJ223	001 152 2432 7
R825	ERDS2TJ152	001 152 2350 8
R826	ERDS2TJ102	001 152 2346 4
R827	ERDS2TJ820	001 152 2453 2
EK, XL		
R828, R829	ERDS2TJ103	001 152 2347 3
R830	ERDS2TJ123	001 152 2424 7
R831	ERDS2TJ682	001 152 2365 1
R832, R833	ERDS2TJ223	001 152 2432 7
R834	ERDS2TJ103	001 152 2347 3
R835	ERDS2TJ123	001 152 2424 7
R836	ERDS2TJ154	001 152 2427 4
R837	ERDS2TJ563	001 152 2446 1
R838	ERDS2TJ154	001 152 2427 4
CAPACITORS		
C1, C2	RCBS1H391KBY	001 103 8540 5
C3, C4	RCBS1H271KBY	001 103 5611 9
C5, C6	ECQB1H123JZ	001 106 3239 2
C7, C8	ECEA0JU101	001 120 2829 8
C9, C10	ECEA1EK4R7	001 120 0294 5
C11, C12	ECBT1H681KB	001 103 3535 2
C15, C16	ECKD1H122KB	001 103 1459 5
C17, C18	ECCD1H181K	001 103 0466 0
C19, C20	ECEA1HKR47	001 120 0338 0
C21, C22	ECEA1HK010	001 120 0341 5
C23, C24	ECKD2H101KB	001 103 1610 6
C25, C26	ECKD1H561KB	001 103 1576 1
C27, C28	ECQB1H332JZ	001 106 3316 6
C29, C30	ECQB1H223JZ	
C31, C32	ECQB1H123JZ	001 106 3239 2
C33, C34	ECQB1H123JZ	001 106 3239 2
C35, C36	ECFR1E153KAY	001 108 1055 6
C37, C38 ⚠	ECKD1H223PF	001 103 1510 9
C39, C40	ECEA1HK010	001 120 0341 5
C41, C42	ECEA1HK2R2B	001 120 0346 0
C43, C44	ECEA1EK4R7	001 120 0294 5
C45, C46	ECEA1EK4R7	001 120 0294 5
C47 ⚠	ECKD1H223PF	001 103 1510 9
C301	ECKD1H392KB	001 103 1547 6
C302	ECFR1E682KAY	
C303, C304	ECFR1E222KAY	001 108 0942 8
C305, ⚠	ECKD1H223PF	001 103 1510 9
C306	ECFD1V473KD	001 108 0256 3
C307	ECQP1183JZ	001 106 1083 2
C308	ECEA1CKS100	001 120 2600 7
E, EG, EH, XA, PA, PE, XB		
C308	ECEA1CU220	001 120 2906 2
EK, XL		
C309, C310	RCBS1H271KBY	001 103 5611 9
C311	ECEA1CKS100	001 120 2600 7
C321	ECEA1CU220	001 120 2906 2
EK, XL		
C401, C402	ECCD1H820K	001 103 0703 6
C403, C404	ECQB1H472JZ	001 106 3380 8
C405, C406	ECEA1CKS100	001 120 2600 7
C407, C408	ECQM1H473JZ	001 106 0810 9
C409, C410	ECQM1H224JZ	001 106 0746 0
C411, C412	ECAG25ER68L	001 120 1109 7
C413, C414	ECQB1H103JZ	001 106 3225 8
C415, C416	ECQB1H472JZ	001 106 3380 8
C417, C418	ECEA1CKS100	001 120 2600 7
C419, C420	ECQM1H473JZ	001 106 0810 9
C421, C422	ECQM1H224JZ	001 106 0746 0
C423, C424	ECAG25ER68L	001 120 1109 7
C425, C426	ECKD1H152KB	001 103 1467 5
C427, C428	ECKD1H122KB	001 103 1459 5
C601, C602	ECEA0JS102	001 120 0152 8
C603	ECEA0JU222	001 120 3161 5
C604, C605 ⚠	ECKD1H223PF	001 103 1510 9
C606 ⚠	ECKD1H223PF	001 103 1510 9
C607, C608	ECEA1AU221	001 120 3131 1
C609, C610	ECEA1CU471	001 120 3202 3
C611	ECEA16V1000	001 120 2545 7
C612	ECKD2H682PE	
C613 ⚠	ECKD1H223PF	001 103 1510 9
C701	ECEA1HK2R2B	001 120 0346 0
C702	ECEA1HK010	001 120 0341 5
C703, C704	ECEA1HK2R2B	001 120 0346 0
C705, C706	ECFD1V473KD	001 108 0256 3
C707	ECEA1CU470	001 120 2835 0
C801	ECEA1CKS100	001 120 2600 7
C802	ECEA1HKR47	001 120 0338 0
C803	ECCD1H101K	001 103 0341 2
C804 ⚠	ECKD1H223PF	001 103 1510 9
C805	ECEA1HK2R2B	001 120 0346 0
C806	ECEA1EK4R7	001 120 0294 5
C807	ECEA1AU221	001 120 3131 1
C808, C809	ECFR1E682KAY	
C810		
C810	ECQV1H224JZ	001 106 3625 6

■ REPLACEMENT PARTS LIST

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

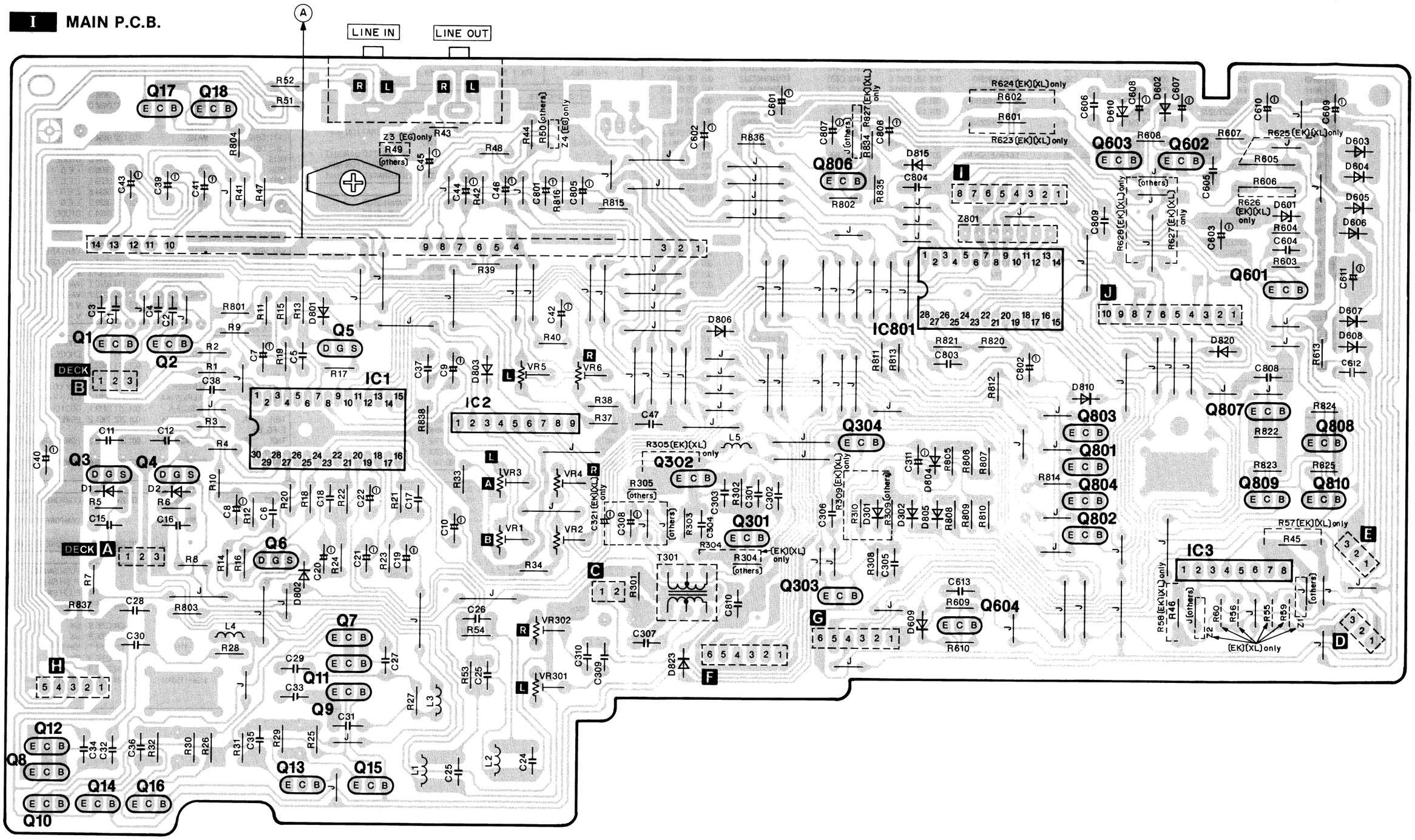
* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

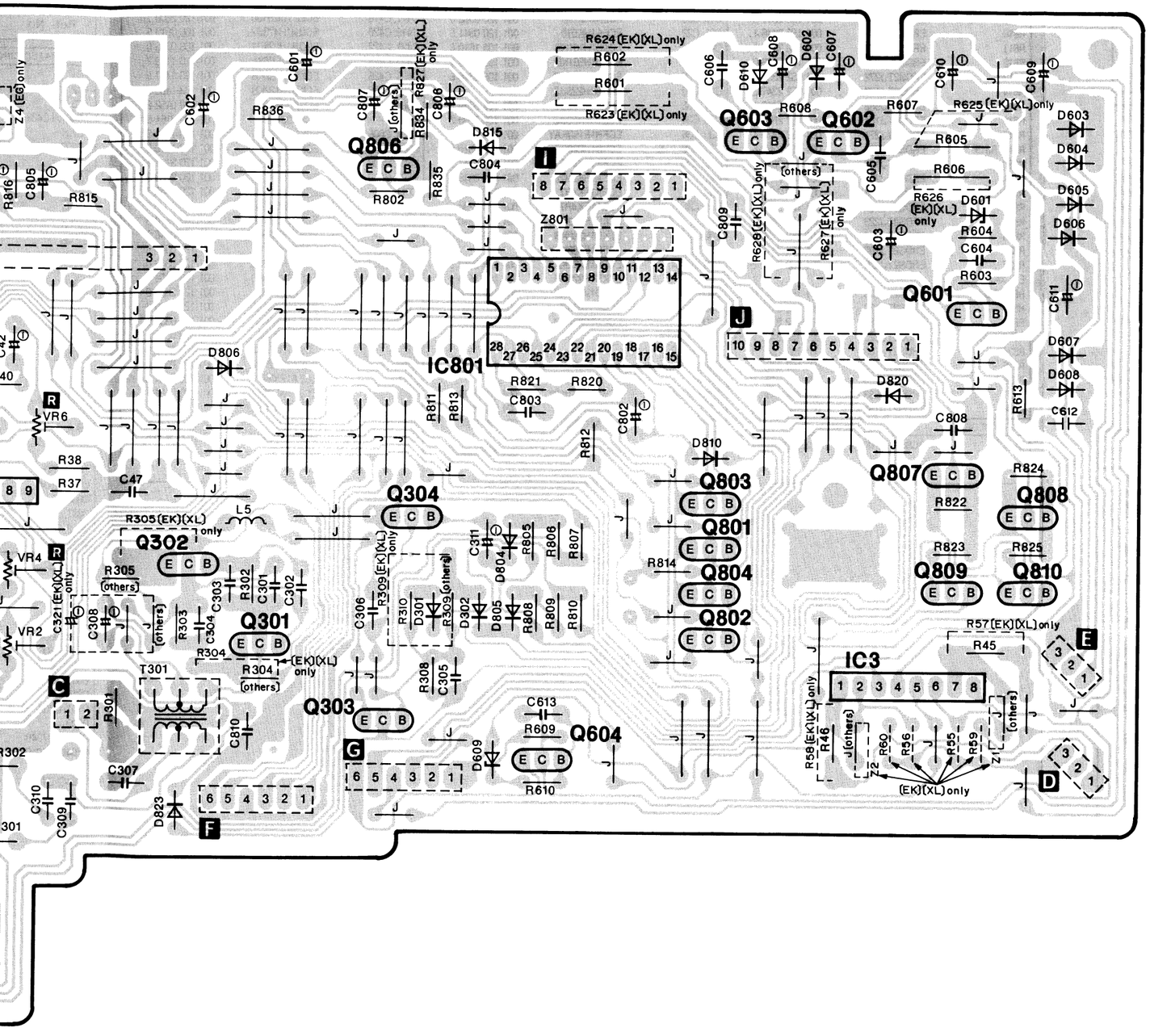
Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS			
IC1	AN7016K	001 061 4629 4	I.C.
IC2	MN6634	001 061 0684 7	I.C.
IC3	M5218L	001 060 3798 7	I.C., OPERATION AMP.
IC401, IC402	TEA0665	001 060 7933 2	I.C.
IC701	M50725-426SP		INTEGRATED CIRCUIT
IC702	M5218L	001 060 3798 7	I.C., OPERATION AMP.
IC801	MN1402ST0	001 061 4933 9	INTEGRATED CIRCUIT
TRANSISTORS			
Q1, Q2	2SD1450R	001 030 4366 1	TRANSISTOR
Q3, Q4	2SJ40CD	001 030 2807 5	TRANSISTOR
Q5, Q6	2SJ40CD	001 030 2807 5	TRANSISTOR
Q7, Q8	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q9, Q10	2SA1309AQS	001 030 4846 0	TRANSISTOR
Q11, Q12	2SA1309AQS	001 030 4846 0	TRANSISTOR
Q13, Q14	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q15, Q16	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q17, Q18	2SA1253-S	001 030 4843 3	TRANSISTOR
Q301, Q302	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q303	2SD592ANCQ	001 030 1752 7	TRANSISTOR
Q304	UN4211	001 030 4033 9	TRANSISTOR
Q401, Q402	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q403, Q404	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q601, Q602	2SD592ANCQ	001 030 1752 7	TRANSISTOR
Q603	2SB621A-R	001 030 0668 6	TRANSISTOR
Q604	2SD592ANCQ	001 030 1752 7	TRANSISTOR
Q701, Q702	2SC3311A-Q	001 030 5279 5	TRANSISTOR
Q703, Q704	2SB621A-R	001 030 0668 6	TRANSISTOR
Q801, Q802	UN4113	001 030 2900 9	TRANSISTOR
Q803, Q804	UN4113	001 030 2900 9	TRANSISTOR
Q806	2SA1309AQS	001 030 4846 0	TRANSISTOR
Q807, Q808	2SD592ANCQ	001 030 1752 7	TRANSISTOR
Q809, Q810	UN4113	001 030 2900 9	TRANSISTOR
Q811, Q812	2SD381D	001 030 7411 1	TRANSISTOR
DIODES			
D1, D2	MA165	001 032 0494 0	DIODE
D301, D302	MA165	001 032 0494 0	DIODE
D601	MA4062-M	001 032 7211 7	DIODE
D602	MA4082M	001 032 4955 6	DIODE
D603, D604 ⚠	SVD1SR35200A	001 032 3951 4	RECTIFIER
D605, D606 ⚠	SVD1SR35200A	001 032 3951 4	RECTIFIER
D607, D608 ⚠	SVD1SR35200A	001 032 3951 4	RECTIFIER
D609	MA4100M	001 032 4722 1	DIODE
D610	MA4075M	001 032 7212 6	DIODE
D701, D702	MA165	001 032 0494 0	DIODE
D703	MA165	001 032 0494 0	DIODE
D704A, D704B	LN463YCPPU	001 032 7887 9	L.E.D
D704C, D704D	LN463YCPPU	001 032 7887 9	L.E.D
D704E, D704F	LN463YCPPU	001 032 7887 9	L.E.D
D704G, D704H	LN863RCPP	001 032 7263 5	L.E.D
D704I, D704J	LN863RCPP	001 032 7263 5	L.E.D
D704K, D704L	LN863RCPP	001 032 7263 5	L.E.D
D705	SVGLS-202		DIODE, GAASP
D801, D802	MA165	001 032 0494 0	DIODE

Ref. No.	Part No.	Part Code	Description
D803, D804	MA165	001 032 0494 0	DIODE
D805, D806	MA165	001 032 0494 0	DIODE
D807, D808	MA165	001 032 0494 0	DIODE
D809, D810	MA165	001 032 0494 0	DIODE
D811, D812	MA165	001 032 0494 0	DIODE
D813, D814	MA165	001 032 0494 0	DIODE
D815	MA165	001 032 0494 0	DIODE
D816	LN846RP	001 032 3839 3	L.E.D
D817	LN346GP	001 032 3829 5	L.E.D
D818	LN446YP	001 032 3834 8	L.E.D
D819	LN846RP	001 032 3839 3	L.E.D
D820, D821	MA165	001 032 0494 0	DIODE
D822, D823	MA165	001 032 0494 0	DIODE
VARIABLE RESISTORS			
VR1, VR2	EVND4AA00B24	001 180 2244 1	VARIABLE RESISTOR
VR3, VR4	EVND4AA00B24	001 180 2244 1	VARIABLE RESISTOR
VR5, VR6	EVND4AA00B14	001 180 2242 3	V.R., 10KΩ(B)
VR7, VR8	EWABP1X05A54	001 174 6870 1	VARIABLE RESISTOR
VR301, VR302	EVND4AA00B15	001 180 2243 2	VARIABLE RESISTOR
VR801, VR802	EVN49C00YB14	001 180 3171 7	V.R., 10KΩ(B)
VR803	EVN49C00YB14	001 180 3171 7	V.R., 10KΩ(B)
COILS AND TRANSFORMERS			
L1, L2	SLQX303-1K	001 211 1756 6	CHOKE COIL
L3, L4	SLQX272-1YT	001 211 0649 2	CHOCK COIL
L5	ELEPK271KA	001 211 0622 3	COIL FILTER
L401, L402	QLB40048	001 210 7275 9	COIL
L403, L404	SLM1B8-K	001 211 2731 1	MPX COIL
L701	ELEPK271KA	001 211 0622 3	COIL FILTER
T301	SL09C19-K	001 211 2472 1	OSCILLATOR COIL
T601 ⚠ E, EG, EH	SLT5K232SA	001 202 7951 2	POWER TRANSFORMER
T601 ⚠ XA, PA, PE, XB	SLT5K233SA	001 202 8312 3	POWER TRANSFORMER
T601 ⚠ EK, XL	SLT5K234SA	001 202 7979 0	POWER TRANSFORMER
COMPONENT COMBINATIONS			
Z1, Z2 EK, XL	EXRP150K104T	001 230 0410 6	COMPONENT COMBINATION
Z3, Z4 EG	EXRP152K104T		COMPONENT COMBINATION
Z801	EXBF7E562J	001 230 1578 9	COMPONENT COMBINATION
SWITCHES			
S1, S2	SSH4110		PUSH SWITCH
S3, S4	SSH4110		PUSH SWITCH
S601 ⚠	SSH1226	003 435 6277 4	PUSH SWITCH
S602 ⚠ XA, PA, PE, XB	SSR187-1	003 430 2201 5	SW, VOLTAGE SELECT
S901, S902	SSP83	003 434 0996 9	SW
S903	SSP83	003 434 0996 9	SW
S904	LSA-1150AU	003 434 0994 1	SWITCH
S905, S906	SSP83	003 434 0996 9	SW
S907	SSP83	003 434 0996 9	SW
S908, S909	LSA-1150AU	003 434 0994 1	SWITCH

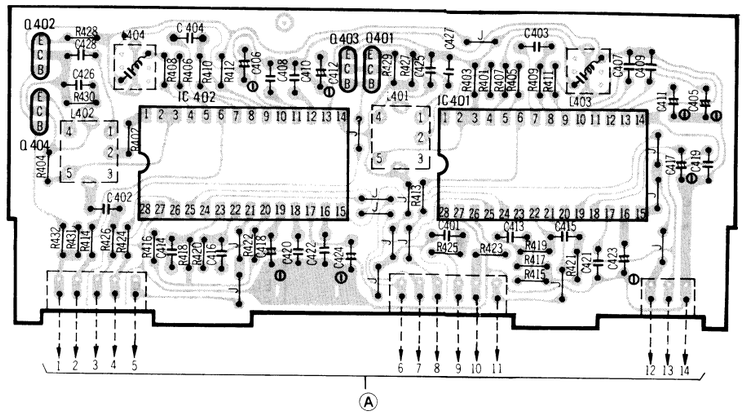
■ PRINTED CIRCUIT BOARDS

I MAIN P.C.B.

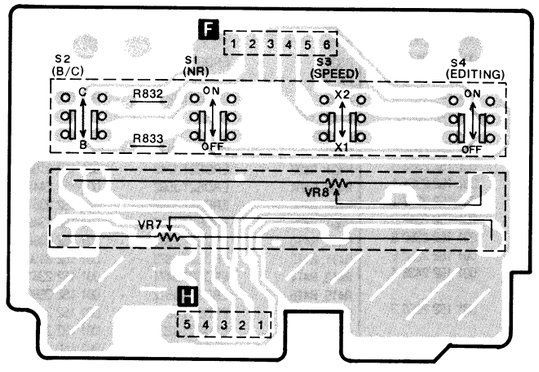




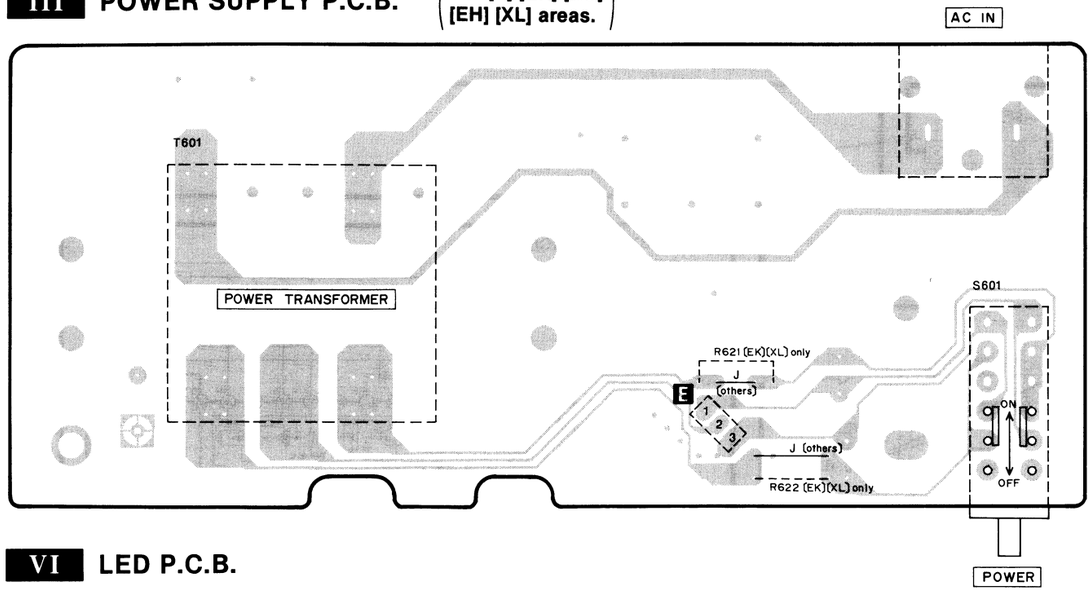
II DOLBY NR P.C.B. To Main P.C.B.



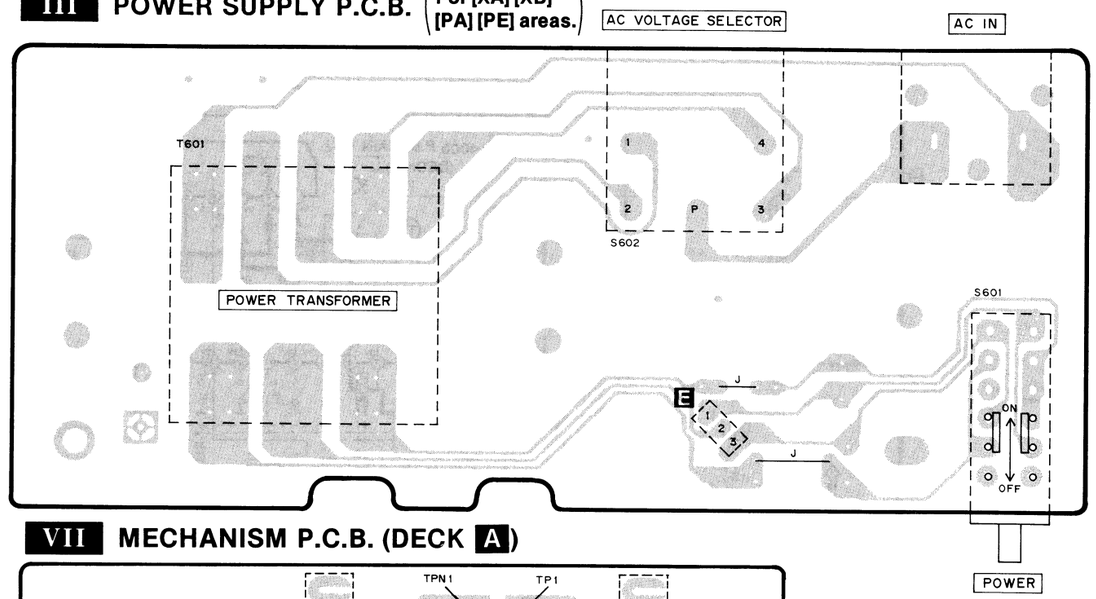
IV VR/SW P.C.B.



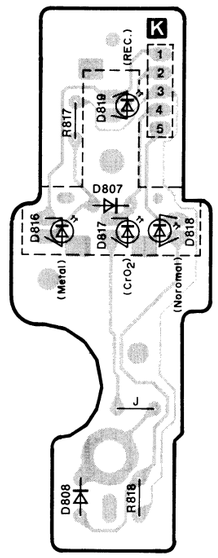
III POWER SUPPLY P.C.B. (For [E] [EK] [EG] [EH] [XL] areas.)



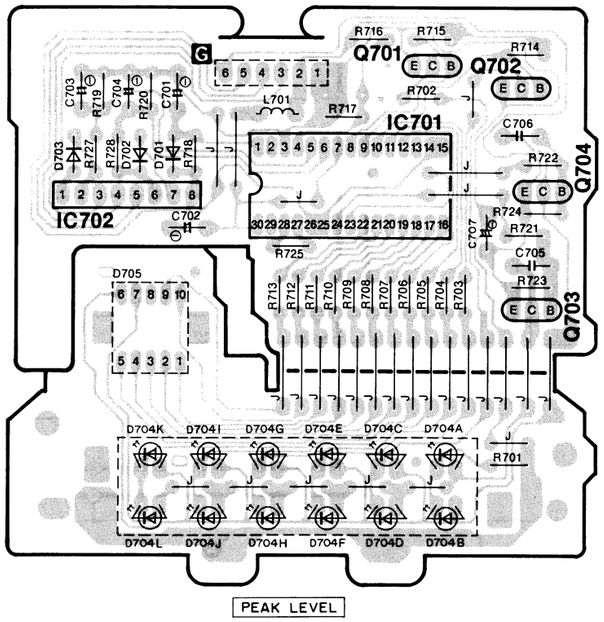
III POWER SUPPLY P.C.B. (For [XA] [XB] [PA] [PE] areas.)



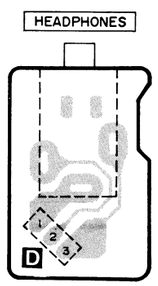
VI LED P.C.B.



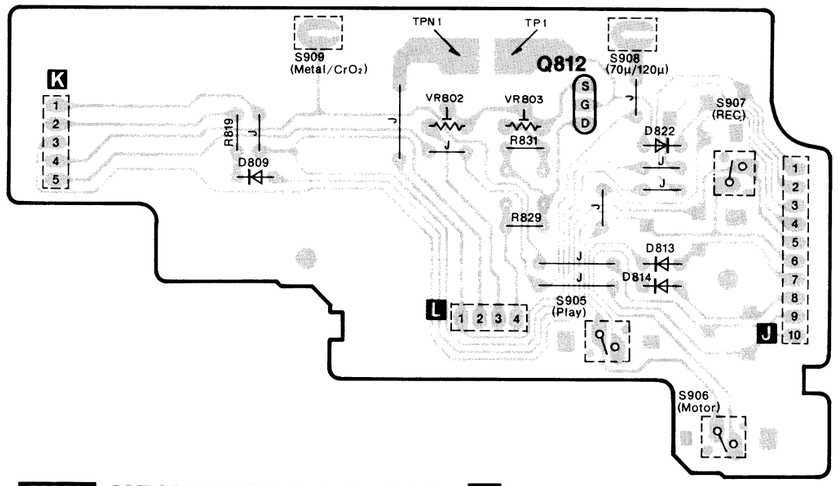
V LED METER P.C.B.



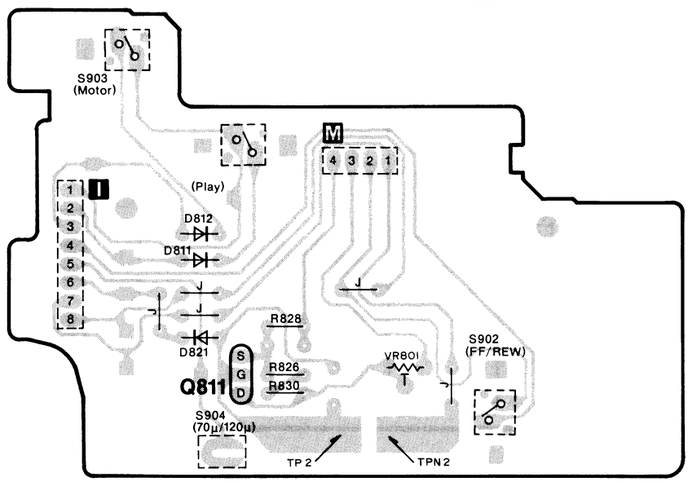
IX HEADPHONES P.C.B.

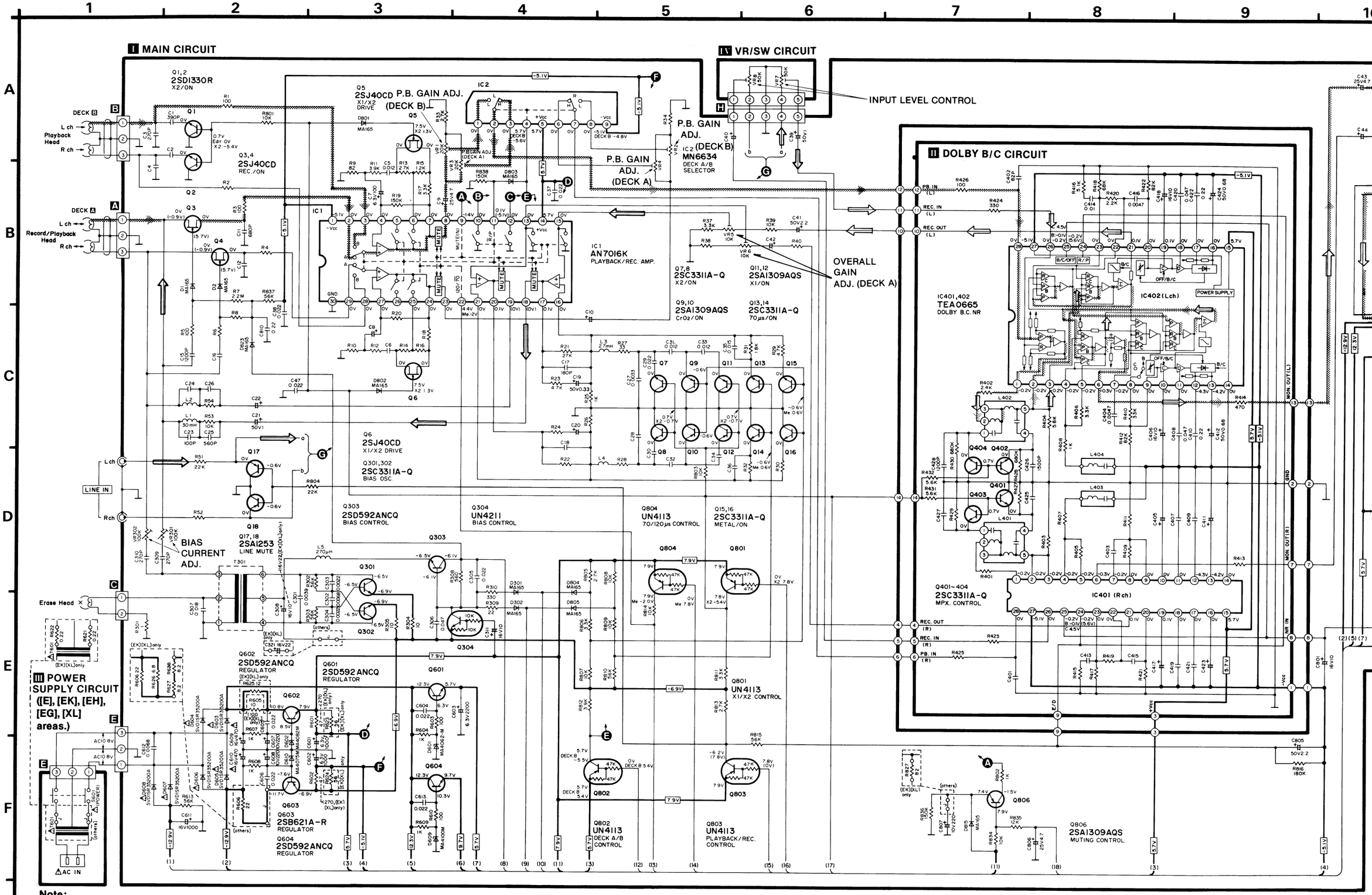


VII MECHANISM P.C.B. (DECK A)



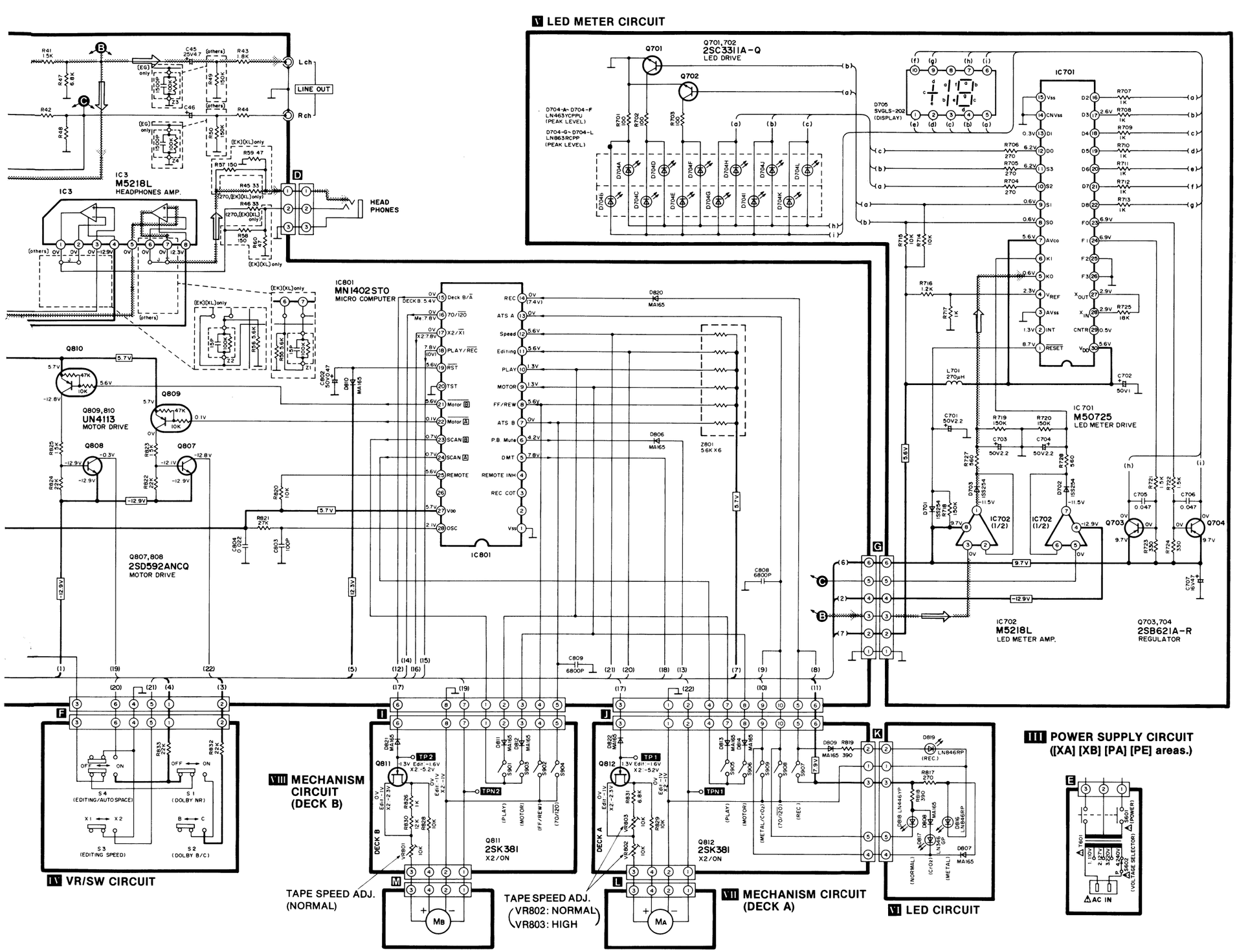
VIII MECHANISM P.C.B. (DECK B)





Note:

Power supply circuit of "[XA] [XB] [PA] [PE] areas" on page 24.



— 23 —

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- **S1** : Editing switch in "**off**" position.
- **S2** : Editing speed select switch in "**X1**" position.
- **S3** : Dolby NR switch in "**off**" position.
- **S4** : Dolby B/C NR selector in "**B**" position.
- **S601** : Power switch in "**off**" position.
- **S602** : Voltage selector switch in "**240V**" position. (110V ← 127V ← 220V ← 240V) ([XA], [PA], [PE], [XB] areas)
- **S901** : DECK B play switch in "**off**" position.
- **S902** : DECK B FF/REW switch in "**off**" position.
- **S903** : DECK B motor switch in "**off**" position.
- **S904** : DECK B 70/120μs detection switch in "**off**" position.
- **S905** : DECK A play switch in "**off**" position.
- **S906** : DECK A motor switch in "**off**" position.
- **S907** : DECK A rec switch in "**off**" position.
- **S908** : DECK A 70/120μs detection switch in "**off**" position.
- **S909** : DECK A Metal/CrO_2 detection switch in "**off**" position.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - ( ) ..... Voltage values at record mode.
  - X2 ..... Voltage values at Editing speed X2 mode.
  - Me ..... Voltage values at Metal tape mode.
  - B ..... Voltage values at Dolby B NR mode.
  - C ..... Voltage values at Dolby C NR mode.
  - Edit ..... Voltage values at Editing mode.
  - DECK B ..... Voltage values at DECK B Playback.
  - For measurement us EVM.
- (—▭—) indicates B (bias).
- (⋯⋯) indicates the flow of the playback signal.
- (⟹) indicates the flow of the record signal.

* Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

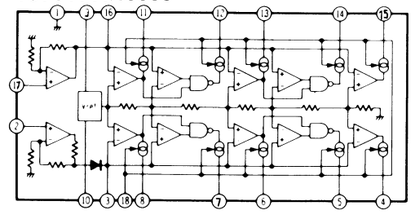
* Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

■ EQUIVALENT CIRCUIT

IC701 : AN6888

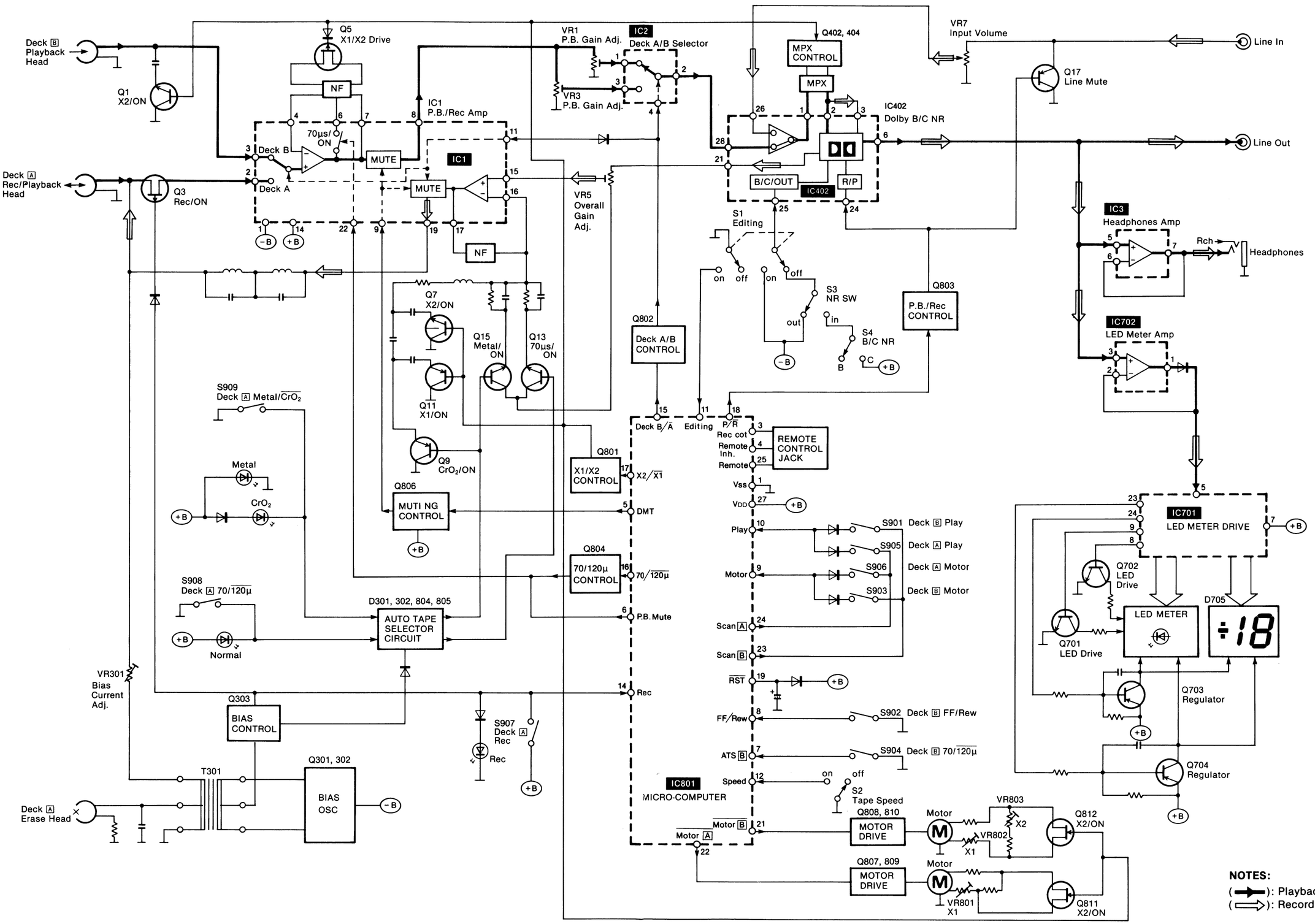


SPECIFICATIONS * Input level control ... MAX

Playback S/N ratio * Test tape ... QZZCFM	Greater than 45dB
Overall distortion * Test tape ... QZZCRA for Normal ... QZZCRX for CrO_2 ... QZZCRZ for Metal	Normal ..... Less than 3.5% CrO_2, Metal ... Less than 4%
Overall S/N ratio * Test tape ... QZZCRA	Greater than 43dB (without NAB filter)

— 24 —

■ BLOCK DIAGRAM



NOTES:
(→): Playback signal
(⇒): Recording signal

■ REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Code	Description
CASSETTE DECK			
101	SJH103	001 270 1833 9	MAGNETIC HEAD (DECK B)
101	RJH4C35GZAM	001 270 1680 8	MAGNETIC HEAD (DECK A)
102	SMQ4596	016 726 0239 1	SPRING
103	RJH7E5YAM	001 270 1681 7	MAGNETIC HEAD (DECK A)
103	SJH97	001 270 1682 6	MAGNETIC HEAD (DECK B)
104	SMQ4768	016 630 0142 0	HEAD BASE
105	RFD135ZA	015 845 0361 4	PANEL
106	SMQT1581	005 500 5750 4	SCREW
107	SMQ4770	016 726 0242 6	HEAD PANEL SPRING
108	SMQ4772	016 740 0061 7	TAKE UP ROLLER ASSY
109	RFS249ZA	015 726 2227 5	SPRING
110	SMQ4774	016 652 0304 8	FUNCTION LEVER STOPPER
111	SMQ4776	016 717 0146 6	PINCH ROLLER ASSY
112	SMQT1458	016 630 0224 9	CHASSIS
113	SMQ4778	016 718 0306 3	REC SAFETY LEVER (DECK A)
114	SMQ4780	016 727 0051 6	PACK HOLDER SPRING
115	SMQ4782	016 757 0032 1	FLYWHEEL METAL
116	RFY183ZA	015 718 3291 9	LEVER
117	SMQ4786	016 650 0555 1	COLLAR
118	SMQT1629	016 726 0778 9	SPRING
119	SMQ4788	016 650 0556 0	COLLAR
120	SMQ4790	016 718 0308 1	CONTROL LEVER
121	RFS379Z	016 726 0430 4	SPRING
122	SMQ4792	016 728 0088 8	BRAKE SPRING
123	SMQ4794	016 717 0147 5	BRAKE ARM ASSEMBLY
124	SMQT1630	016 726 0777 0	SPRING
125	SMQ4800	016 765 0025 4	SUPPLY REEL ASSEMBLY
126	SMQT1636	016 726 0779 8	SPRING
127	SMQ4804	016 765 0026 3	TAKE UP REEL ASSEMBLY
128	SMQ4806	016 652 0305 7	SENSING PIECE
129	SMQ4808	016 726 0244 4	SENSING PIECE SPRING
130	SMQ4810	016 745 0069 4	FF GEAR
132	RFU16ZA	015 630 1587 9	PLATE
133	SMQ4814	016 718 0309 0	T. ROLLER KICK LEVER
135	SMQ4818	016 718 0310 7	SENSING LEVER
136	SMQ4820	016 726 0245 3	SENSING LEVER SPRING
137	SMQ4822	016 740 0062 6	PULLEY
138	SMQ4824	016 752 0078 2	FULL AUTO BELT
139	SMQ4826	016 745 0070 1	CAM GEAR
140	SMQT1631	016 726 0781 4	SPRING
141	SMQT1583	016 717 0242 7	ARM
142	SMQT1635	016 752 0123 4	FLAT BELT
143	SMQ4832	016 718 0311 6	RF SLIDING LEVER ASSY
144	SMQ4834	016 718 0312 5	AUTO LEVER
145	SMQ4938	016 643 0447 5	AUTO LEVER COLLAR
146	SMQ4836	016 630 0143 9	BUTTON BASE(L)
148	SMQ4840	016 630 0144 8	BUTTON BASE(R)
149	SMQT1585	016 643 0920 1	SPACER (DECK A)
150	SMQT1586	016 718 3306 1	LEVER (DECK A)
151	SMQ4846	016 718 0315 2	PLAY BUTTON LEVER
152	SMQ4848	016 718 0316 1	RWD BUTTON LEVER
153	SMQ4850	016 718 0317 0	FF BUTTON LEVER
154	SMQ4852	016 718 0318 9	STOP BUTTON LEVER
155	SMQ4854	016 718 0319 8	PAUSE BUTTON LEVER ASSY
156	SMQ4856	016 726 0246 2	BUTTON LEVER SPRING
157	SMQ4858	016 726 0247 1	BUTTON LEVER SPRING
158	SMQ4860	016 726 0248 0	PAUSE LEVER SPRING
159	SMQ2444	016 718 0205 7	LEVER
160	SMQ4862	016 652 0306 6	P STOPPER
161	SMQT1588	016 726 0770 7	SPRING
162	SMQT1587	016 718 3305 2	LEVER
163	RFS253ZA	015 726 2232 8	SPRING
164	SMQT1589	016 718 3304 3	LEVER
166	SMQ4872	016 718 0323 2	EJECT KICK LEVER
168	SMQ4880	016 718 0325 0	FUNCTION LEVER W/SP
169	SMQT1590	016 630 1711 5	SUB CHASSIS
170	SMQ4888	016 728 0089 7	M GEAR SPRING
171	SMQ4890	016 728 0090 4	TRIGGER ARM SPRING
172	SMQ4892	016 717 0150 0	TRIGGER ARM ASSEMBLY
173	SMQ4894	016 745 0071 0	MAIN GEAR
174	SMQ4896	016 745 0130 6	PAUSE GEAR
175	SMQ1591	016 752 0121 6	MAIN BELT
176	SMQT1592	016 756 0080 8	FLYWHEEL ASSY
177	SMQ4902	016 717 0151 9	TRIGGER ARM
178	SMQ4904	016 728 0091 3	TRIGGER ARM SPRING
179	SMQ4906	016 717 0152 8	PAUSE ARM ASSY
180	SMQ4909	016 726 0780 5	SPRING
181	SMQ4910	016 643 0445 7	LIFT ARM COLLAR
182	SMQT1593	016 717 0243 6	ARM
183	RFS248ZA	015 726 2226 6	SPRING
184	SMQT1731		MOTOR ASSY
185	SMQT1633	016 650 5188 4	FM-HOLD PLATE
186	SMQ4916	016 653 0621 3	MOTOR RUBBER
187	SMQT1595	016 630 1710 6	FL PLATE
188	SMQ4922	016 726 0251 5	SPRING
190	SMQ4940	016 718 0326 9	KICK LEVER
191	SMQ4858	016 726 0247 1	BUTTON LEVER SPRING
192	SMQT1453	016 726 0423 3	SPRING
193	SMQT1598	016 650 5194 6	BRACKET
194	SMQT1680	016 643 1042 8	FELT
195	RFS378Z	016 726 0610 2	SPRING
205	RFS378Z	016 726 0610 2	SPRING
SCREWS, WASHERS & NUTS			
131	SMQ4168	016 650 0538 2	COLLAR
134	SMQT1582	005 500 5751 3	SCREW
147	SMQ4838	005 500 4519 3	COLLAR SCREW
165	SMQ4870	016 650 0562 2	COLLAR SCREW
167	SMQ4878	016 643 0444 8	COLLAR SCREW
189	SMQ4942	016 643 0448 4	COLLAR SCREW
196	SMQ4936	005 513 2293 9	NYLON WASHER
197	XSN2+8	005 500 1301 1	SMALL SCREW
198	SMQT1634	005 500 5867 2	SCREW
199	XWG2	005 513 1459 9	WASHER
200	SMQ4944	005 500 2957 3	SCREW
201	XYN2+C4	005 503 0548 9	SCREW
202	XYN2+C6	005 500 1297 0	SCREW
203	XSN26+5	005 500 1361 9	SCREW
204	XYN2+C5	005 500 1291 6	SCREW
206	RFE133Z	005 512 0346 6	RETAINING RING
207	SMQ4930	005 513 2291 1	POLYSLIDE WASHER
208	XUC12FT	005 512 0116 8	WASHER
209	XUC2FT	005 512 0126 6	E-RING
210	XYN26+C6	005 503 0554 1	SMALL SCREW
211	XUC15FT	005 512 0121 1	WASHER
212	SMQ4932	005 513 2292 0	NYLON WASHER
213	SMQ4934	005 500 2956 4	SCREW
214	XTN26+3	005 501 3346 5	TAPPING SCREW
215	SMQT1454	005 513 4008 0	WASHER
216	SQM4918	016 643 0446 6	COLLAR SCREW
217	RFN73Z	016 643 0778 9	SPACER

■ MECHANICAL PARTS LOCATION

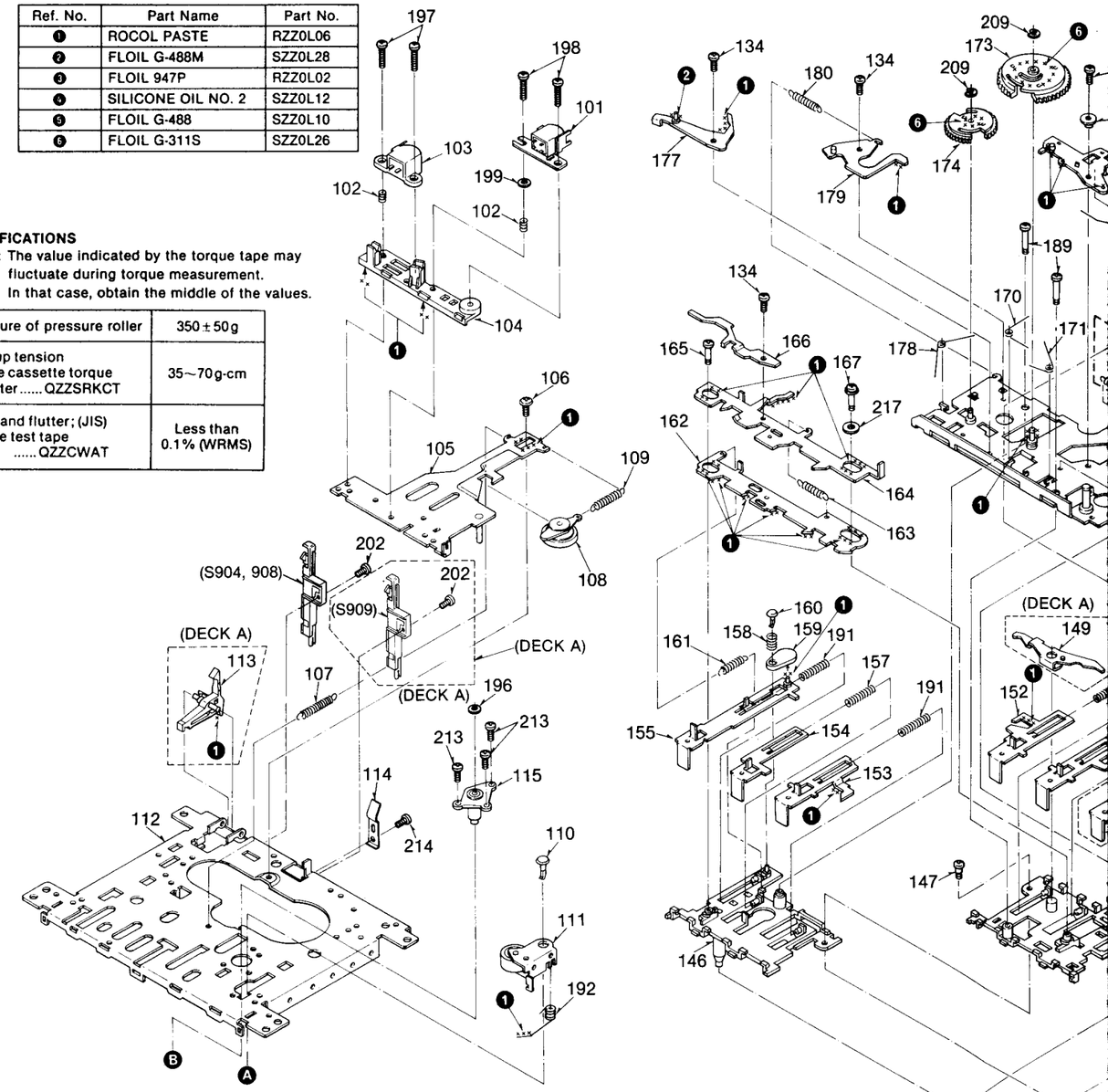
NOTES:
- When changing mechanism parts. apply the specified grease to the are marked "××" shown in the drawing "Mechanical Parts Location".

Ref. No.	Part Name	Part No.
❶	ROCOL PASTE	RZZ0L06
❷	FLOIL G-488M	SZZ0L28
❸	FLOIL 947P	RZZ0L02
❹	SILICONE OIL NO. 2	SZZ0L12
❺	FLOIL G-488	SZZ0L10
❻	FLOIL G-311S	SZZ0L26

SPECIFICATIONS

NOTE: The value indicated by the torque tape may fluctuate during torque measurement. In that case, obtain the middle of the values.

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	35~70g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.1% (WRMS)



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■ MECHANICAL PARTS LOCATION

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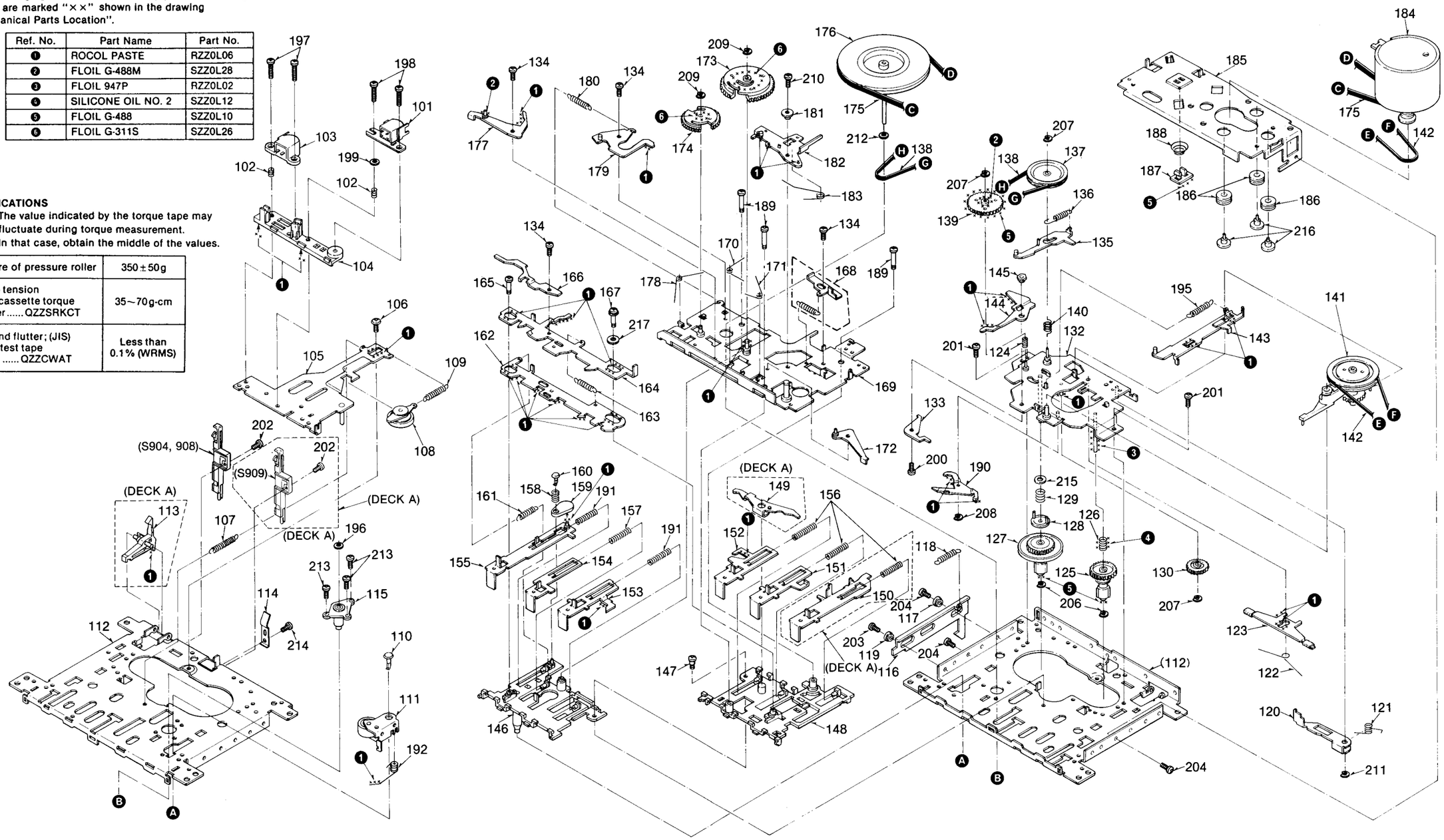

Description
EVER
JECT KICK LEVER
UNCTION LEVER W/SP
UB CHASSIS
GEAR SPRING
TRIGGER ARM SPRING
RIGGER ARM ASSEMBLY
AIN GEAR
AUSE GEAR
AIN BELT
LYWHEEL ASSY
RIGGER ARM
TRIGGER ARM SPRING
AUSE ARM ASSY
PRING
FT ARM COLLAR
M
PRING
OTOR ASSY
H HOLD PLATE
OTOR RUBBER
PLATE
PRING
CK LEVER
UTTON LEVER SPRING
PRING
ACKET
ELT
PRING
PRING
OLLAR
CREW
OLLAR SCREW
OLLAR SCREW
OLLAR SCREW
YLON WASHER
WALL SCREW
CREW
ASHER
CREW
CREW
CREW
CREW
ETAINING RING
OLYSLIDE WASHER
ASHER
RING
WALL SCREW
ASHER
YLON WASHER
CREW
APPING SCREW
ASHER
LLAR SCREW
PACER

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■ REPLACEMENT PARTS LIST

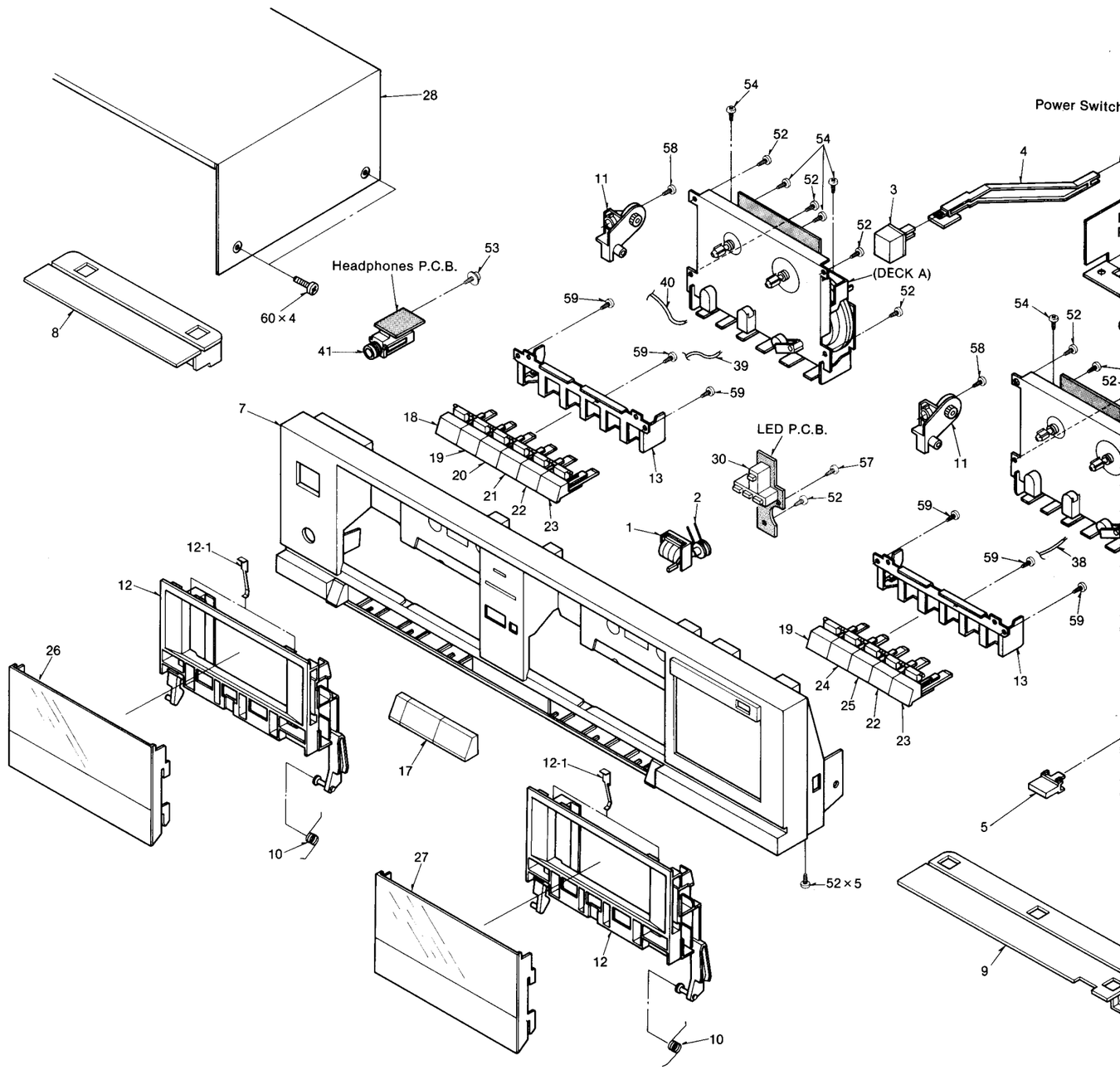
Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.
* Ⓚ-marked parts are used for black only, while Ⓢ-marked parts are for silver type only.
* Part other than Ⓚ-and Ⓢ-marked are use for both black and silver type.

Ref. No.		Part No.	Part Code	Description
CABINET AND CHASSIS				
1		SJN20	016 892 0121 5	TAPE COUNTER
2		SMQ20018	016 754 0054 0	ANGULAR BELT
3	Ⓢ	SBC666	016 702 5545 6	BUTTON, POWER
3	Ⓚ	SBC666-5	016 702 6679 9	BUTTON, POWER
4		SUB255	016 712 0316 1	ROD
5	Ⓚ	SBC944	016 702 7018 6	BUTTON
5	Ⓢ	SBC944-1	016 702 7117 4	BUTTON
6		SKMST22-KE	016 800 3138 8	CABINET BODY
E				
6		SKMST22-KG	016 800 3139 7	CABINET BODY
EG, EH				
6		SKMST22-KK	016 800 3141 3	CABINET BODY
EK				
6		SKMST22-KL	016 800 3140 4	CABINET BODY
XL				
6		SKMST22-KX	016 800 3142 2	CABINET BODY
XA, PA, PE, XB				
6-1		SKL293	016 828 0269 8	RUBBER
7	Ⓚ	SGYST22-KE	016 840 7875 2	FRONT PANEL (K)
7	Ⓢ	SGYST22-SE	016 840 7877 0	FRONT PANEL (S)
8		SGX7894	016 846 3777 9	SPACER
9		SGX7895	016 846 3776 0	SPACER
10		SUS797	016 726 0677 3	SPRING
11		SGXST25-KP	016 846 3480 3	ORNAMENT
12		SGXST17-KM	016 846 3795 7	CASSETTE HOLDER
12-1		QBP2006A	015 727 0706 8	SPRING
13		SMN2001-1	016 632 1784 8	ANGLE
14	Ⓚ	SGX7901	016 846 3827 6	METER ORNAMENT
14	Ⓢ	SGX7901-1	016 846 3860 5	ORNAMENT
15	Ⓚ	SBD144	016 700 1979 0	KNOB
15	Ⓢ	SBD144-1	016 700 2000 6	KNOB
16	Ⓚ	SGX7898	016 846 3775 1	ORNAMENT
16	Ⓢ	SGX7898-1	016 846 3854 3	SLIDE GUIDE
17	Ⓚ	SGX7897	016 846 3796 6	ORNAMENT
17	Ⓢ	SGX7897-1	016 846 3853 4	ORNAMENT
18	Ⓢ	SBC801A-1	016 702 6427 7	BUTTON
18	Ⓚ	SBC866A	016 702 6649 5	BUTTON
19	Ⓢ	SBC802A-1	016 702 6425 9	BUTTON
19	Ⓚ	SBC867A	016 702 6650 2	BUTTON
20	Ⓢ	SBC803A-1	016 702 6423 1	BUTTON
20	Ⓚ	SBC868A	016 702 6651 1	BUTTON
21	Ⓢ	SBC804A-1	016 702 6421 3	BUTTON
21	Ⓚ	SBC869A	016 702 6654 8	BUTTON
22	Ⓢ	SBC805A-1	016 702 6419 7	BUTTON
22	Ⓚ	SBC870A	016 702 6655 7	BUTTON
23	Ⓢ	SBC806A-1	016 702 6417 9	BUTTON
23	Ⓚ	SBC871A	016 702 6656 6	BUTTON
24	Ⓢ	SBC803B-1	016 702 6476 8	BUTTON
24	Ⓚ	SBC868B	016 702 6652 0	BUTTON
25	Ⓢ	SBC804B-1	016 702 6474 0	BUTTON
25	Ⓚ	SBC869B	016 702 6653 9	BUTTON
26	Ⓚ	SGE1892	016 820 0619 6	CASSETTE LID
26	Ⓢ	SGE1892-2	016 820 0618 7	CASSETTE LID
27	Ⓚ	SGE1892-1	016 820 0604 3	CASSETTE LID
27	Ⓢ	SGE1892-3	016 820 0617 8	CASSETTE LID
28	Ⓚ	SKC2090K99	016 800 3071 0	CABINET BODY
28	Ⓢ	SKC2090S98	016 800 3133 3	CABINET BODY
29		LN121307P	001 032 8495 7	DIODE, GAASP
30		LN041395P1	001 033 0227 2	LED BLOCK
31		SJF3057NK	003 410 8123 0	TERMINAL BOARD
32	⚠	SJS9236	003 403 4660 7	AC SOCKET
34		SJT30540LX-V	003 410 5996 1	CONNECTOR
34		SJT30840LX-V	003 410 5998 9	LUG TERMINAL
34		SJT31040LX-V	003 410 6112 1	LUG TERMINAL
35		QJP1920TN-1	003 403 7219 8	CONNECTOR
35		QJP1921TN-1	003 403 7220 5	CONNECTOR
36		SMC1227	016 601 0543 0	SHIELD COVER
37		SMN2043	016 632 1880 9	ANGLE
38		SWKST11M1	016 934 0162 5	P.HEAD WIRE
39		SWKST11M2	016 934 0161 6	R/P HEAD WIRE
40		SWKST11M3	016 934 0160 7	E.HEAD WIRE
41		QJA0455ZC	003 400 5218 2	JACK
SCREWS, WASHERS & NUTS				
51		XTBS3+8JFZ1	005 501 2523 0	SCREW
52		XTB3+10J	005 501 2076 2	SCREW
53		XTWS3+10Q	005 501 2293 5	SCREW
54		XTB3+6F	005 501 2687 1	SCREW
55		XTB3+12JFZ	005 501 2078 0	TAPPING SCREW
56		XTV26+6J	005 501 1301 6	SCREW
57		XTW3+12Q	005 501 1350 7	TAPPING SCREW
58		XTB3+12J	005 501 1534 1	SCREW
59		XTV26+8J	005 501 1140 5	SCREW
60	Ⓢ	SNE2125	005 500 5753 1	SCREW
60	Ⓚ	SNE2125-1	005 500 5752 2	SCREW
61		XTB3+8JFZ	005 501 0138 3	SCREW

Ref. No.		Part No.	Part Code	Description
PACKINGS				
P1	Ⓚ	SPG5906	016 971 5084 3	CARTON BOX
P1	Ⓢ	SPG5907	016 971 5085 2	CARTON BOX
P2		SPS4963	016 977 3314 6	PAD
P3		SPS4964	016 977 3327 1	PAD
P4		SPS4905	016 977 3274 7	PAD
P5		XZB50X65B02	016 978 0420 2	PROTECTION COVER
ACCESSORIES				
A1	⚠	SFDAC05E03	003 490 4809 5	POWER CORD
E, EG, EH, XA, PA, PE				
A1	⚠	SFDAC05G02	003 490 2613 3	POWER CORD
EK				
A1	⚠	SJA163	003 490 2503 8	POWER CORD
XL				
A1	⚠	SJA183	003 490 4873 7	POWER CORD
XB				
A2		SJPK2202	003 492 6415 1	CORD
A3		SQF12922	016 983 5252 9	INSTRUCTION BOOK
EG				
A3		SQF12923	016 983 5253 8	INSTRUCTION BOOK
E, EH				
A3		SQF13048		INSTRUCTION BOOK
EK				
A3		SQF12969	016 983 5255 6	INSTRUCTION BOOK
XA, XL				
A3		SQF13028	016 983 5256 5	INSTRUCTION BOOK
PA, PE				
A3				
XB				
A4	⚠	SJP9215	003 402 1437 9	AC PLUG ADAPTOR
XA, PA, PE, XB				

■ CABINET PARTS LOCATION



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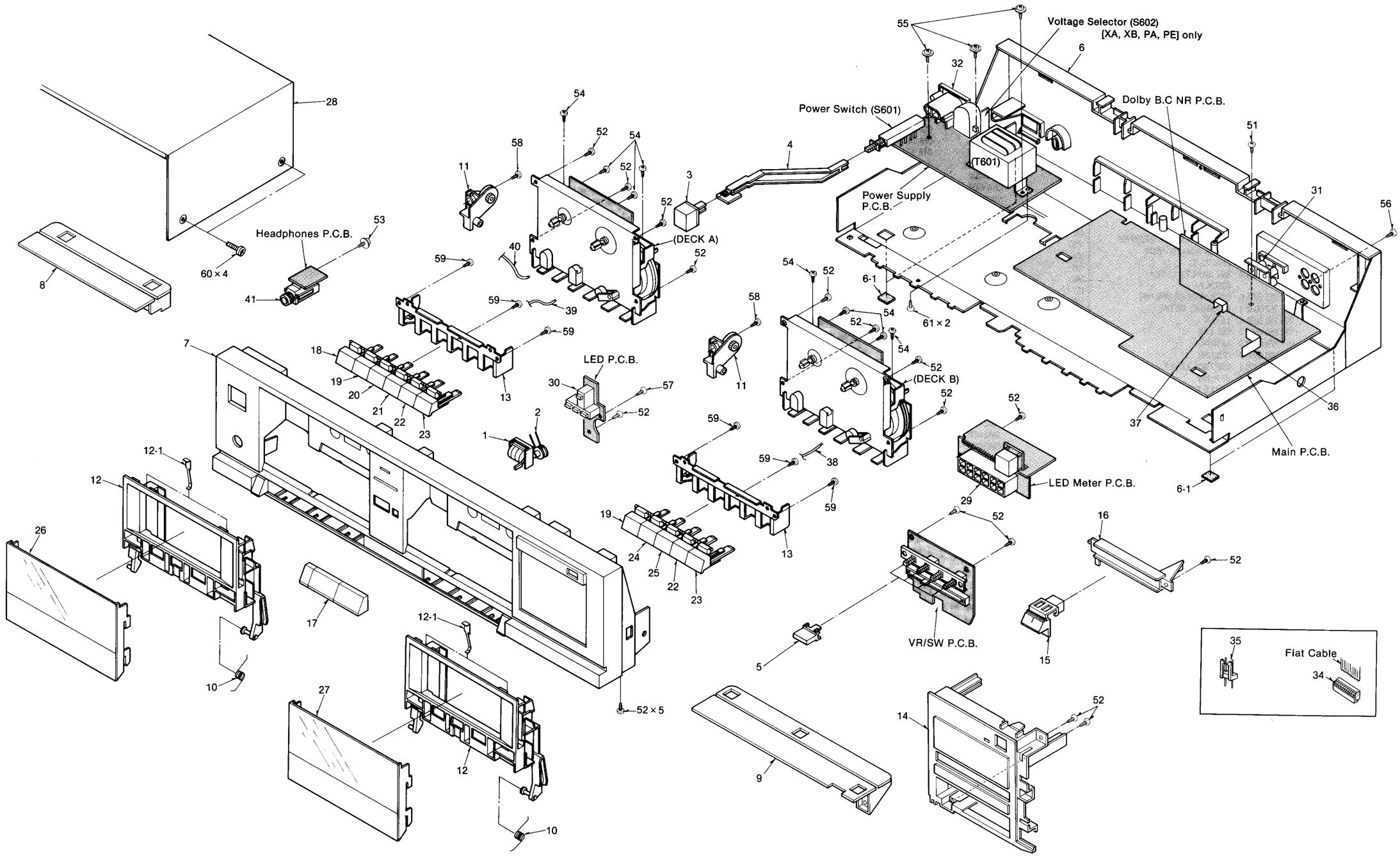
■ CABINET PARTS LOCATION



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